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NAMES II (NAVY AMPHIBIOUS MEDICAL EVACUATION SIMULATION) USER'S--ETC(U)

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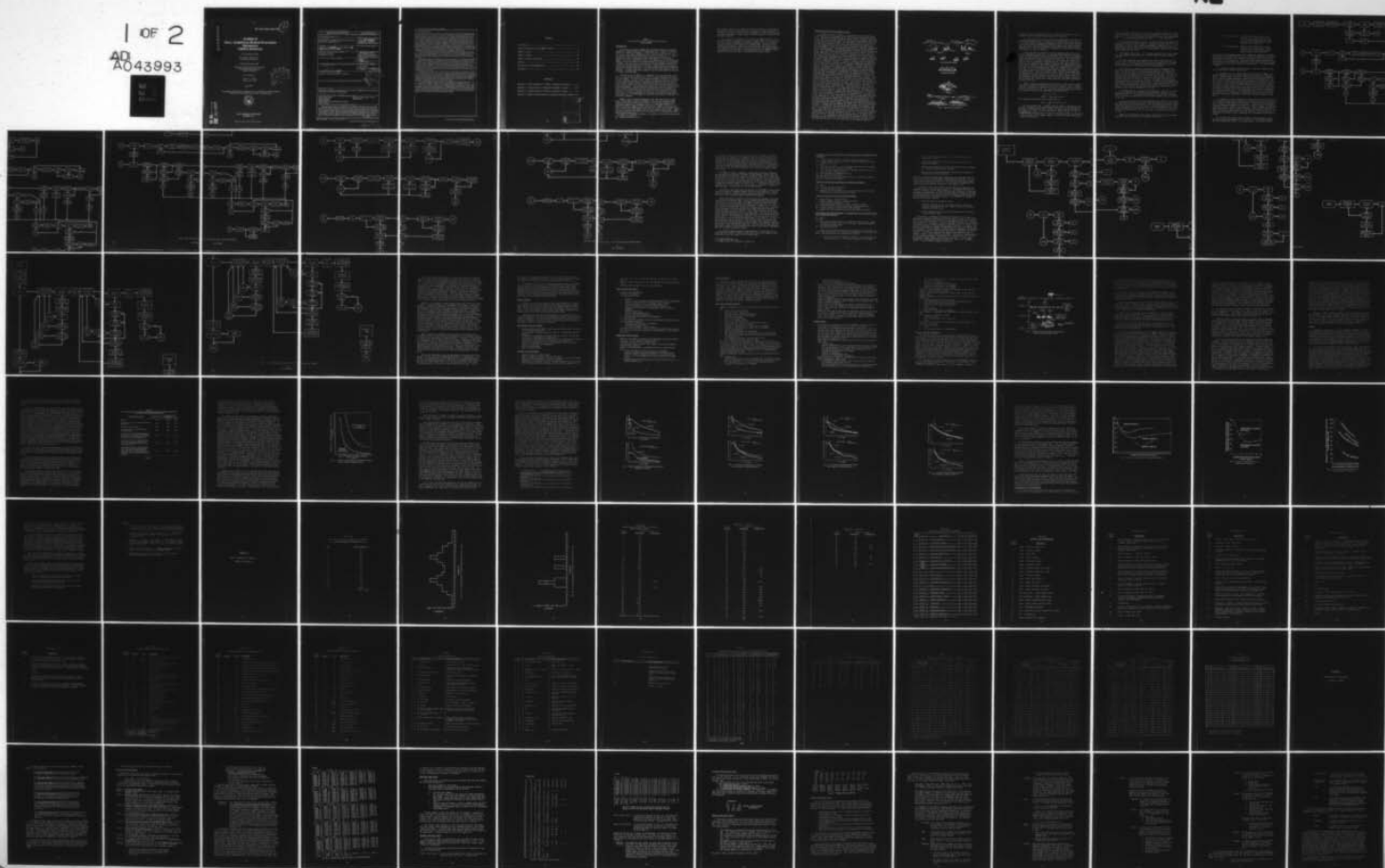
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NAMES II **(Navy Amphibious Medical Evacuation** **Simulation)** **USER'S MANUAL**

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Naval Research Laboratory NAMES II (Navy Amphibious Medical Evacuation Simulation) Model simulates medical treatment and evacuation of casualties within a combat zone. The medical system which the model represents includes various levels of casualty receiving facilities, including the hospital corpsman or medic, battalion aid stations, clearing stations, and hospitals. The hospitals may be shore-based or sea-based. Unlike most known models which have been developed for combat medical contingency planning, NAMES II is truly a discrete simulation model, based on logical relationships. For example, each casualty who enters the simulated evacuation system is assigned a series of (Continues) → on p (1)		

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20. Abstract (Continued)

medical treatments, or work units, which he must receive before he can enter convalescence and subsequently return to duty. These work units must be administered, in sequence, by designated medical personnel, and each work unit requires a specified time to complete. Some of these work units are critical in the sense that if one is not completed within a time specified by the user the patient will die; if another is not completed in time, the patient's convalescent period will be increased. An evacuation vehicle is requested at once when a high priority patient enters an evacuation queue; lower priority patients are required to accumulate in number or for a period of time before an evacuation vehicle is requested. A simulated patient in NAMES II is evacuated from a medical facility for any of the following three reasons: (1) no qualified medical treater (for the patient's next work unit) is assigned to the facility; (2) the patient has received enough work units so that he can be moved safely, and his convalescent time (user specified) exceeds the facility evacuation policy, i.e., the period of time which a patient is allowed, by military considerations, to remain at a facility; and (3) the patient has completed all of his work units, but the facility has no convalescent beds available.

The model will accept any specified casualty admission rates, and is not dependent upon sub-models which relate battle scenarios, troop strengths, climate and terrain to casualty generation rates. Thus, medical and tactical planners can vary the patient "mix" and use the NAMES II Model to observe the effects of different weapons systems, of different patient loads, and of improved medical techniques.

The NAMES II Model can be manipulated by the user in many ways. In addition to specifying the resources at each facility, e.g., medical personnel, beds, and vehicles, the user specifies the number of medical facilities, the distances between them, and he also specifies rules for the employment of evacuation vehicles. These rules include vehicle capacity and speed, which patients should be loaded on a vehicle, a vehicle's destination, and which patients should be unloaded at that destination. By selecting these rules properly the user may (1) restrict the type of evacuation vehicle to be employed at each facility; (2) restrict the destinations that can be reached directly from each facility; (3) restrict the patients that can use each type of evacuation vehicle; and (4) specify that certain patients must be evacuated to specific facilities.

NAMES II output reports include various measures of patient dispositions, including the number who die, the number who return to duty and the number evacuated out of the combat zone; measures of lost time due to injuries and illness, resource requirements, and resource utilization. NAMES II has already demonstrated that previous methods for computing combat medical bed requirements, based on bed occupancy in World War II and other combat situations, do not give reliable results. NAMES II computes bed requirements based on the simulated battle casualties, the resources of the evacuation system, and the evacuation policies in force in the combat zone.

The NAMES II Model is currently operational on a CDC (Control Data Corporation) 6600 computer system. The computer program is written in the SIMSCRIPT II.5 simulation language.

This report is addressed to the user of the NAMES II Model—the analyst who wishes to employ the model to design, plan, or evaluate combat zone medical treatment and evacuation systems. The User's Manual presents a detailed description of the NAMES Model, together with its inputs and outputs. The Manual also discusses some results which were obtained from the model to illustrate the types of analysis that can be performed with the model. Additional details of the NAMES II Model operation will be contained in the Program Maintenance Manual.

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NAMES II
(Navy Amphibious Medical Evacuation Simulation)
USER'S MANUAL

INTRODUCTION

The original version of NAMES (Navy Amphibious Medical Evacuation Simulation) became operational in September, 1975. Written in the SIMSCRIPT I.5 simulation language, it soon displayed its power as a tool for medical contingency planning and also as a research tool. [1] It also demonstrated that standard techniques, developed in World War II, for determining medical personnel and bed requirements are inaccurate. NAMES I, as it was subsequently called, was apparently the first military medical evacuation model to be based completely on logical relationships. In NAMES I, patients died if they did not receive adequate treatment in time; they were evacuated from a facility if that facility did not have appropriate medical personnel, or if their convalescent time exceeded the facility's evacuation policy,* or if the facility's bed capacity was inadequate. No other known model based all of its consequences and actions on logical relationships.

The development of NAMES II in SIMSCRIPT II.5 was undertaken in mid-1976 in order to give the military an even stronger research tool than the first NAMES. The Office of Assistant Secretary of Defense for Health Affairs (OASD(HA)) wanted a model capable of assisting military planners in evaluating various medical regulating procedures so that the procedures finally adopted as policy would be the most efficient medical regulating procedures. This required the model to accept user-specified evacuation procedures, including vehicle loading rules, vehicle destination rules, vehicle unloading rules, and restrictions on the assignment of patients to evacuation vehicles as well as to certain medical treatment facilities. It was decided that the best way to accomplish these objectives would be to develop NAMES II, using the more powerful SIMSCRIPT II.5 simulation language.

NAMES II first became operational on the CDC (Control Data Corporation) 6600 computer system in December, 1976, and has undergone additional changes since that time in order to incorporate further medical regulating capabilities requested by the U.S. Army TOMSS (Theater of Operations Medical Support System) Study Group. NAMES II has since been used to assist the TOMSS Study Group, and its concepts are currently being studied and used by the Medical Board of the Swedish Armed Forces. NAMES II has also attracted the attention of the Defense Civil Preparedness Agency,

* the period of time which a patient is allowed, by military considerations, to remain at a facility.

Note: Manuscript submitted July 15, 1977.

the Maryland Institute for Emergency Medicine, and the Air Line Pilots Association. These organizations are concerned with the development of systems to cope with civilian medical emergencies, ranging from every-day automobile accidents to mass casualty situations such as earthquakes and aircraft accidents.

This report is addressed to the user of the NAMES II Model -- the analyst who wishes to employ the model to design, plan, or evaluate combat zone medical treatment and evacuation systems. The User's Manual presents a detailed description of the NAMES Model, together with its inputs and its outputs. The Manual also discusses some results which were obtained from the model to illustrate the types of analysis that can be performed with the model. Additional details of the NAMES II Model operation will be contained in the Program Maintenance Manual.

GENERAL DESCRIPTION OF THE NAMES II MODEL

The NAMES II Model is capable of simulating various configurations of the basic medical treatment and evacuation chain illustrated in Figure 1. Casualty receiving facilities may be added or removed (completely, if desired) at any facility levels or echelons, and additional levels may also be inserted into the model. As each patient enters the system, he is classified according to the nature and severity of his wounds or illness by assigning him to one of a set of user-defined patient classes which encompass all types of anticipated casualties, including outpatients as well as inpatients. A patient may enter the system at any facility level. The distribution of entering patients over all levels is specified by the model user. The user also selects the second facility level to which a patient should go if he must be evacuated from his entry level. The class to which a patient is assigned determines to a large extent his flow through the evacuation chain and his processing at each facility that he enters. Each inpatient's class determines which of three priorities he will be assigned: Priority 1, "urgent," indicates that the patient is in critical condition and must receive the most expeditious attention in order to save his life; Priority 2, "immediate," indicates that the patient's condition is very serious and he must be treated without delay; Priority 3, "routine," indicates that the patient is serious enough to require admission to the medical system, but requires no special attention to treat his condition. Outpatients are assigned Priority 4, which indicates that those patients may wait for treatment until there are no other patients at a higher priority requiring commitment of treater resources. Each patient's class also indicates whether he occupies a litter or ambulatory status, and assigns to the patient an ordered sequence of medical treatments, called work units, which the patient must receive before he can convalesce and return to duty. The user must specify the work units, in their proper sequence, for each patient class. The user must also identify, within this sequence, a Critical Mortality Work Unit, a Critical Convalescent Work Unit, and a work unit which is called the patient's First-Aid Work Unit. The same work unit may be identified for all three if the user desires. These three work units have a considerable influence on the patient's treatment and ultimate disposition. If the patient's Critical Mortality Work Unit is not completed in a time specified by the user, he will die; if the patient's Critical Convalescent Work Unit is not completed in a time specified by the user, his convalescent time, originally selected at random from a probability distribution which is provided by the user for each patient class, will be multiplied by a factor specified by the user; finally, the patient will not be evacuated from a medical treatment facility (except the medic level) until his First-Aid Work Unit is completed, provided appropriate treaters are assigned to the facility to provide all work units up to and including his First-Aid Work Unit. Upon completion of the patient's First-Aid Work Unit and each subsequent work unit, his convalescent time, which may now have been increased, is compared to the facility evacuation policy, i.e., the period of time which a patient is allowed, by military considerations, to remain at the facility. If his convalescent time exceeds the evacuation policy, he will be stabilized for a period of time specified by the user, and then evacuated from the facility. The First-Aid Work Unit guarantees that the

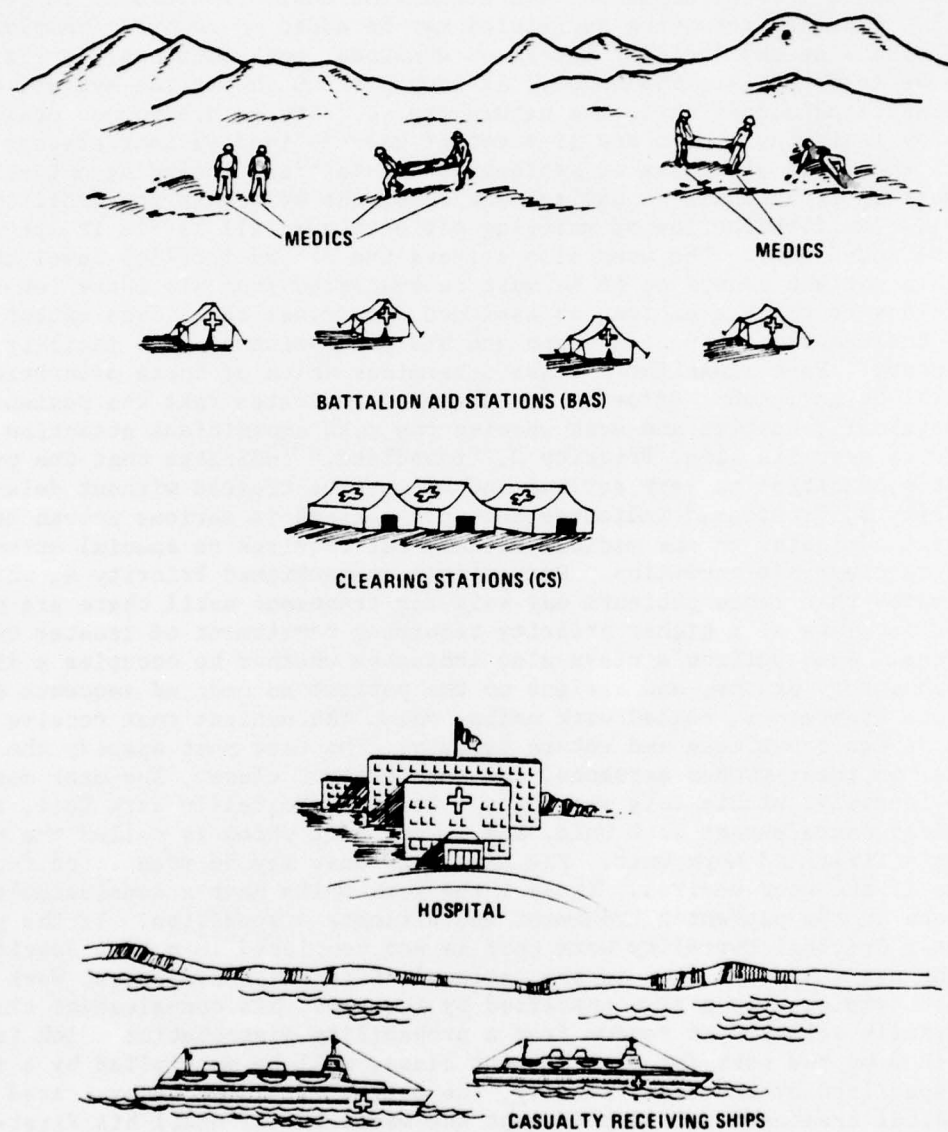


Fig. 1 — Basic chain of evacuation

patient will not be evacuated until it is medically feasible to move him, provided required treaters are assigned to his facility.

The user also has the option of assigning each patient (by class) a Mortality Threshold Time. If a patient is so designated, he will die if his initial medical treatment (triage and first aid) at his entry facility is not begun within the designated Threshold Time. This added feature allows the user to identify and observe those patients who require prompt emergency care, such as respiratory resuscitation or sealing of a sucking chest wound, in order to survive.

If the user does not identify a Critical Mortality Work Unit, or a Critical Convalescent Work Unit, or a First-Aid Work Unit for a patient class, the model assumes that those work units have already been completed before the patients in that class enter that facility. This means that a patient who has no Critical Mortality Work Unit cannot die no matter how long he waits for treatment; a patient who has no Critical Convalescent Work Unit can experience no possible increase in his convalescent or recovery time, contrary to what might be expected from complications caused by delays in receiving certain work units. If a patient has no First-Aid Work Unit, he will be stabilized and evacuated, without receiving any of his required work units, if his convalescent time exceeds the facility evacuation policy. This will happen to such a patient even though medical personnel who could save his life may be sitting idle at the facility. If a Mortality Threshold Time is not specified for a patient class, the model assumes that the patients in that class need not begin treatment in any specified time, except those times associated with other identified Critical Work Units.

NAMES II computes patient arrivals based on a Poisson arrival pattern. (Many other probabilistic patterns could also be used.*) This is mathematically equivalent to assuming that the time interval between successive arrivals (interarrival time) is a continuous random variable whose density or frequency is given by the exponential density function

$$f(\lambda, t) = \lambda e^{-\lambda t},$$

where λ = mean arrival rate.

The cumulative interarrival time is then given by

$$P(\lambda, t) = \int_0^t f(\lambda, t) dt = 1 - e^{-\lambda t}.$$

The mean arrival rate λ during a specific hour of a particular combat day is computed from the mean number of arrivals on that day and the proportion of patients who arrive during that hour; both are specified by the NAMES user. $P(\lambda, t)$ is next selected as a number between 0 and 1

* SIMSCRIPT II.5 has routines for using the following probability functions: Beta, Binomial, Erlang, Gamma, Normal, Log Normal, Poisson, Exponential, Uniform, and Weibull.

by a random number generator, one of which is reserved exclusively to generate inpatients, and another to generate outpatients. This gives a unique value of λt (since P is monotone increasing), from which the interarrival time t is then computed by using the value of λ just calculated.

If the computed interarrival time t would cause the next patient to arrive during the next hour, instead of during the current hour, he is not generated. Instead, a new patient is generated, based on the new λ for the next hour, and the newly calculated interarrival interval is made to begin at the start of the next hour. This guarantees that the next patient enters during the next hour.

If the mean arrival rate $\lambda = 0$ during a specific hour of any combat day, the computer program proceeds to the next hour until it computes a non-zero λ .

The first inpatient is generated at the start of the first hour of combat during which inpatient casualties occur, as specified by the user. On the arrival of each inpatient, the succeeding inpatient is generated. The same procedure is followed separately for outpatients.

When a patient is generated, his patient class is determined randomly from the distributions (inpatient and outpatient) provided by the user. The facility level at which each patient enters the evacuation chain is selected randomly from input provided by the user. The specific facility that the patient enters is randomly selected from a uniform distribution over all facilities at that level. The mobility of each inpatient (ambulatory or litter) is randomly determined according to user input associated with the patient's class. In addition, each inpatient's convalescent time is randomly selected from a distribution provided by the user and associated with his patient class. Other attributes of an inpatient, such as priority and work units, are assigned according to the patient's class, and are determined by the user.

All outpatients are considered to be ambulatory; they have no convalescent time assigned at the time they are generated, and they are all assigned Priority 4. The remaining attributes of outpatients, including their work units, are assigned according to the patient class and selected by the user.

If the user chooses to identify outpatients with patient classes which are associated with inpatients, then those outpatients will have to receive the same work units as the inpatients. The only difference between outpatients and inpatients in the same class is that the outpatients are originally assigned a convalescent time of zero. If they fail to receive their Critical Convalescent Work Unit in time, their convalescent time becomes one day.

NAMES II uses different random number streams for each of the twelve variables that are determined on a probabilistic basis --

7 for each inpatient: arrival time, patient class, entry facility level, entry facility, mobility, convalescent time, and first aid time at the FEBA (a random number between 6 and 19 minutes).

5 for each outpatient: arrival time, patient class, entry facility level, entry facility, and first aid time at the FEBA (a random number between 6 and 19 minutes).

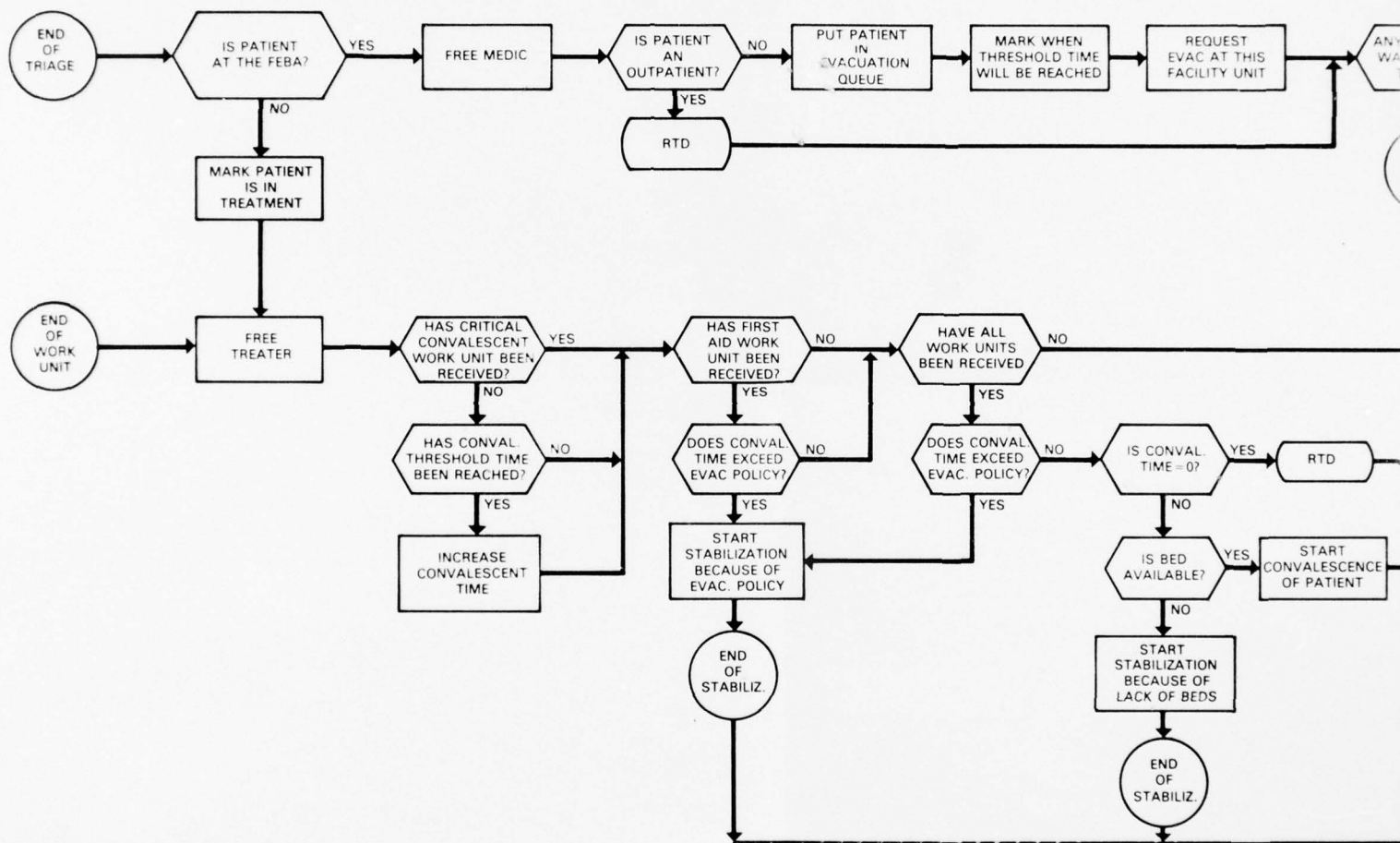
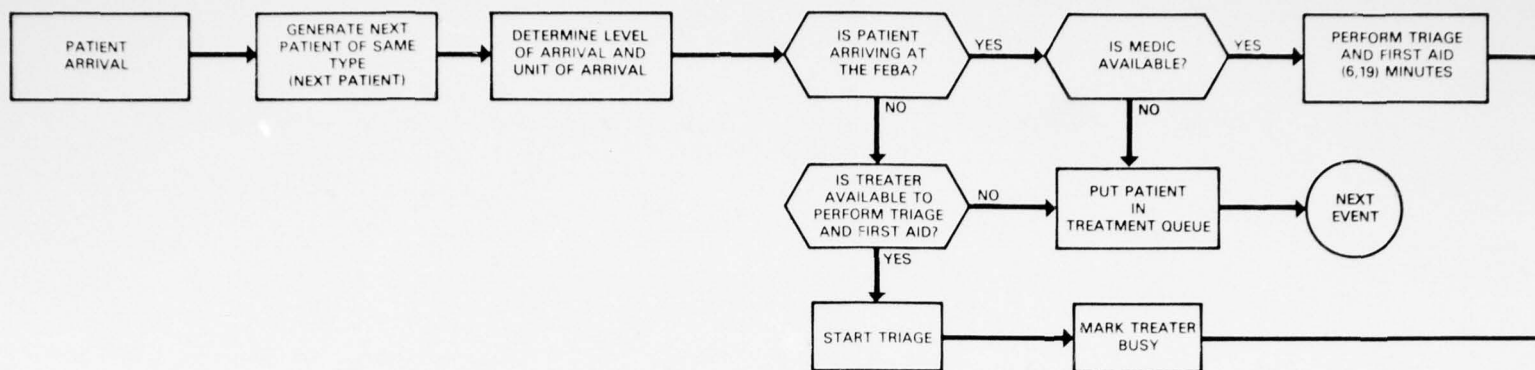
These twelve random number streams were deliberately separated in NAMES II so that the user could change one or more random variables at a time without affecting the others. For example, the user may select to omit all outpatients in one simulation. If the same random number stream was used to generate both inpatients and outpatients, the random variables for inpatients would be affected by omitting the outpatients. This cannot happen in NAMES II.

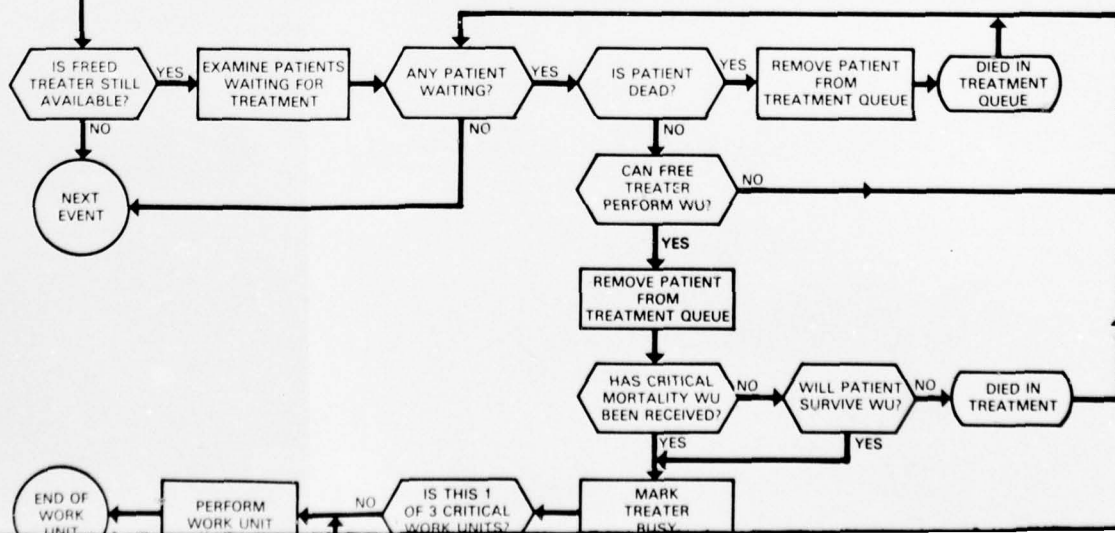
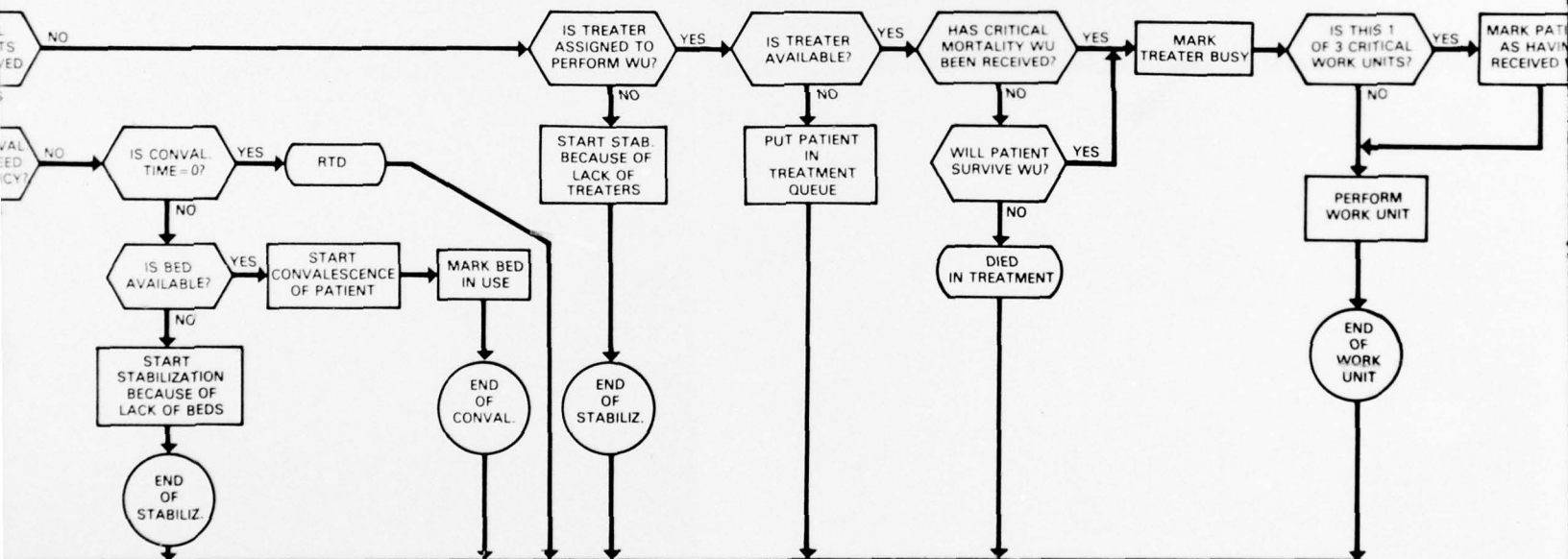
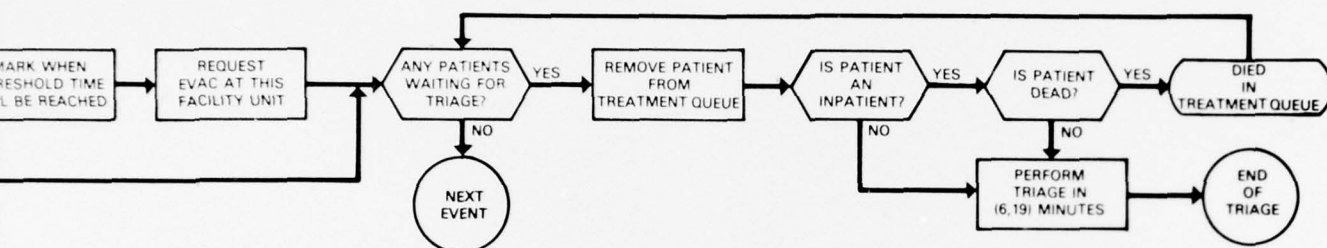
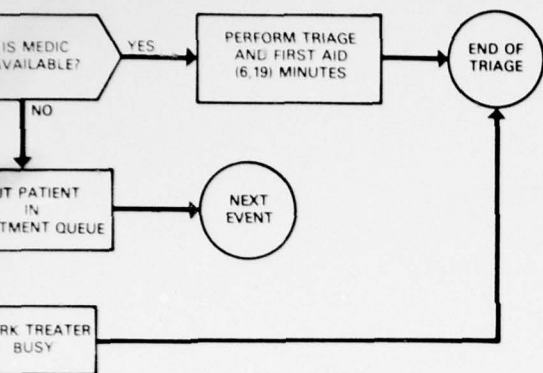
The treatment pattern of patients within a specific treatment facility is described in Figures 2(a) and 2(b).

At the medic level, or Forward Edge of the Battle Area (FEBA), all patients undergo triage and receive first aid on a first-in, first-out basis. Inpatients who survive this initial treatment are then evacuated to the rear for further treatment; outpatients are returned to duty. At all facilities except at the medic level, patients are treated on a priority basis. After undergoing triage and first aid, each patient receives his sequence of work units, provided appropriate treaters are assigned. The NAMES II Model allows flexibility in designating treaters by allowing the user to identify preferred and alternate treaters for each work unit. An expected treatment time is associated with each treater's performance of a particular work unit. If an appropriate treater is not assigned to the facility level, the patient is stabilized and evacuated to the rear. Otherwise the patient continues to receive his ordered sequence of work units.

If a patient is able to receive all of his required work units and if his convalescent time does not exceed the evacuation policy at his facility, he will enter a convalescent ward and return to duty from that facility if the convalescent bed capacity is sufficient. Otherwise he will be stabilized and evacuated further to the rear. If a patient enters a facility for convalescence only, triage is not performed. If his convalescent time is within the limits of the facility's evacuation policy and if a bed is available, he remains at this facility for his period of convalescence and is subsequently returned to duty. Otherwise, he is evacuated to the next facility.

Two of the factors which cause a patient to be evacuated (treaters and bed capacity) are measures of the resources of the evacuation chain; the third (evacuation policy) is a command policy. The order in which





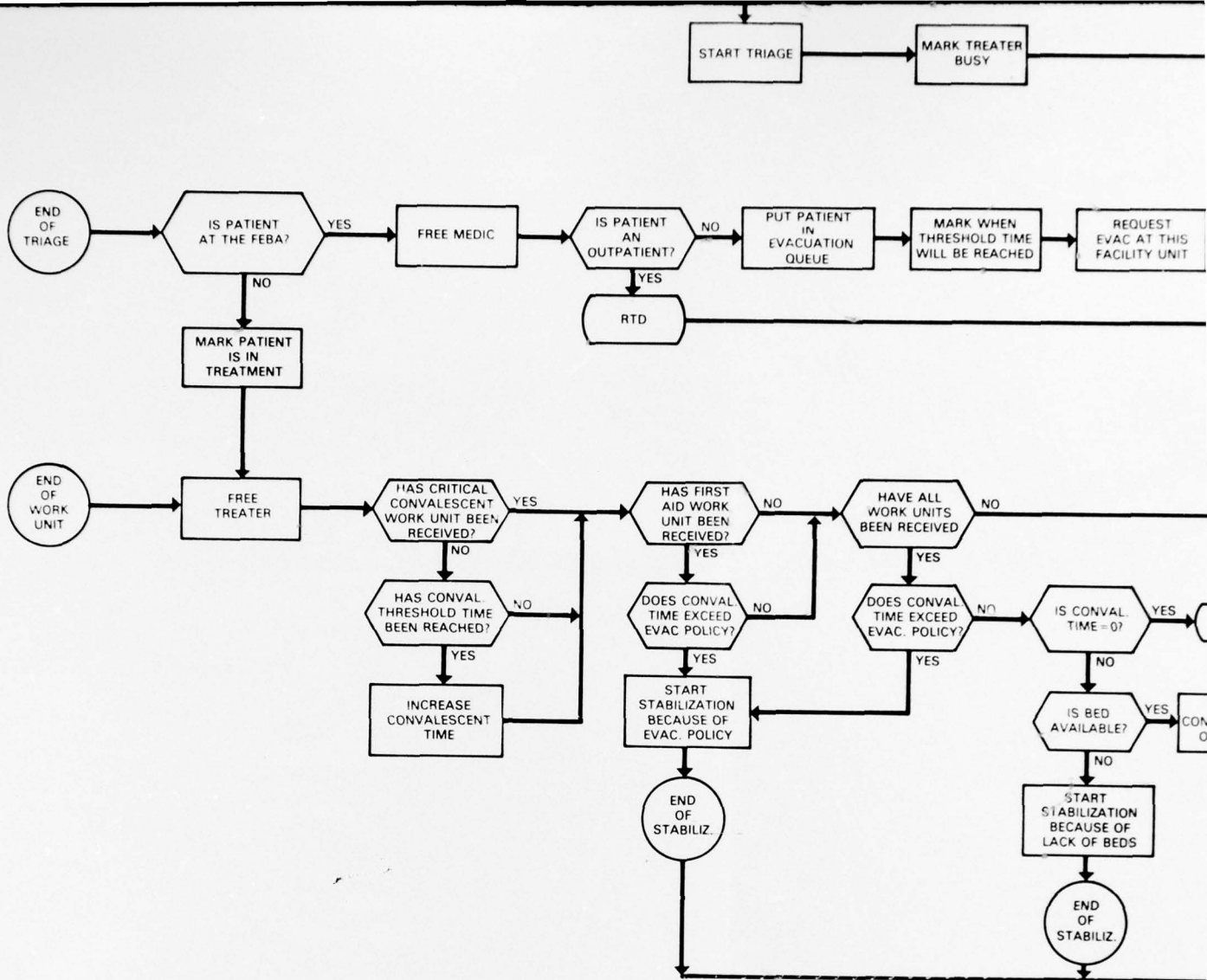
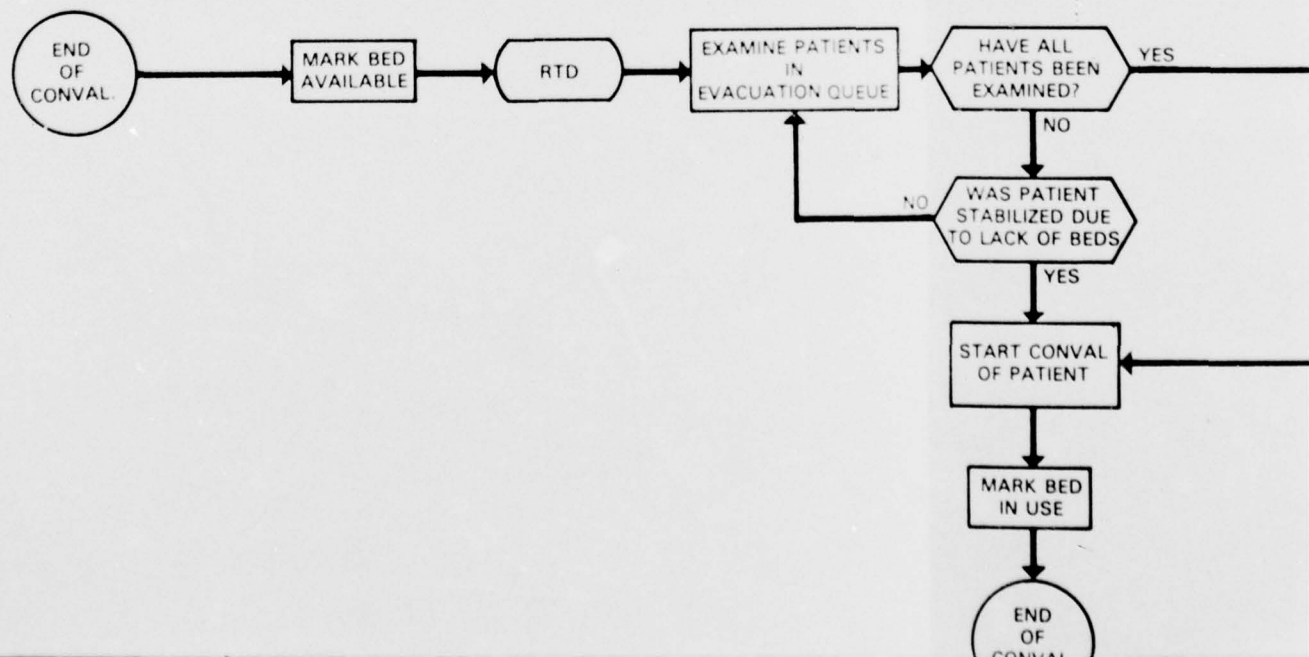
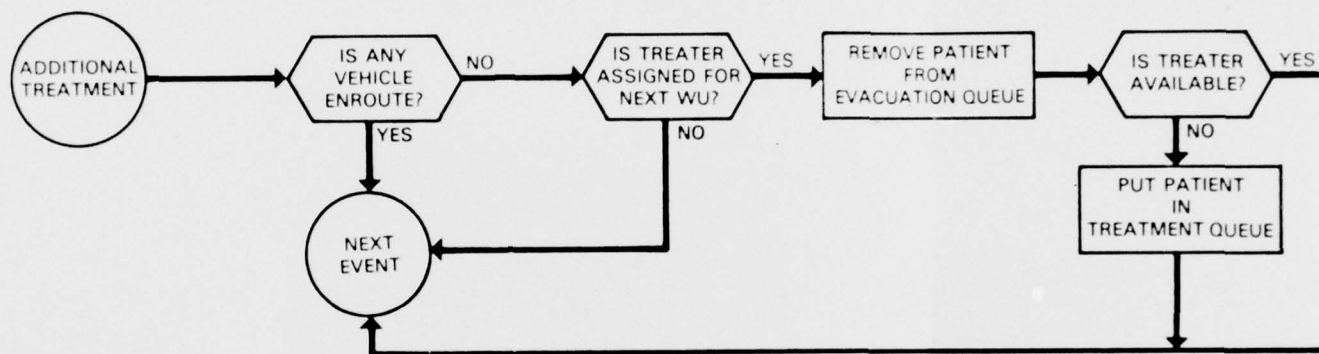
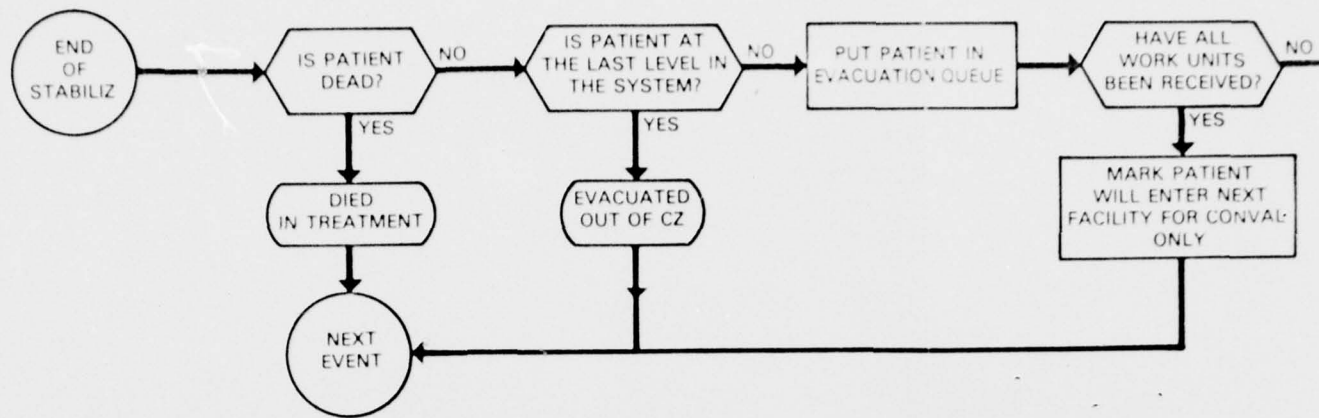
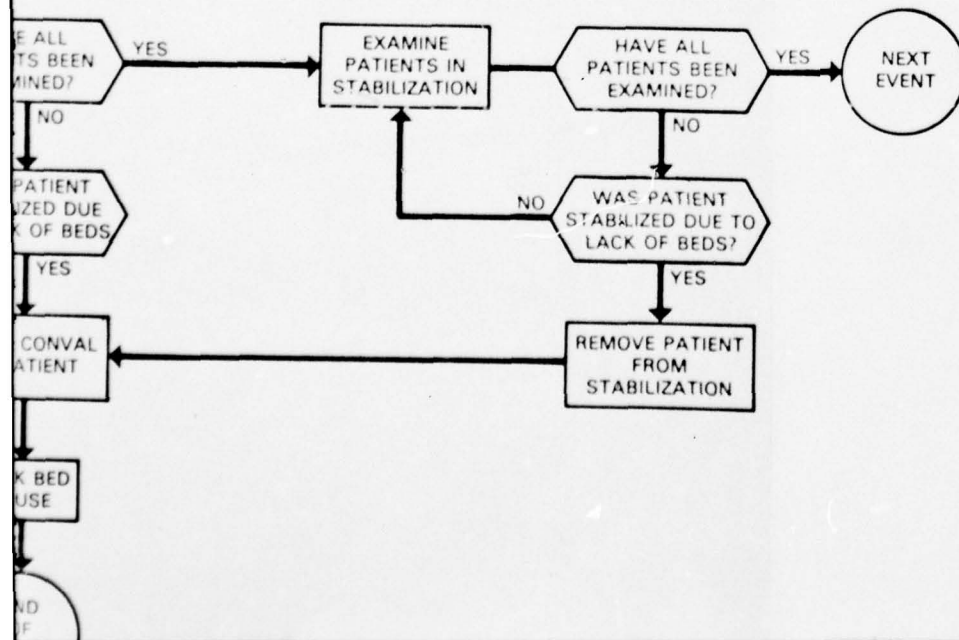
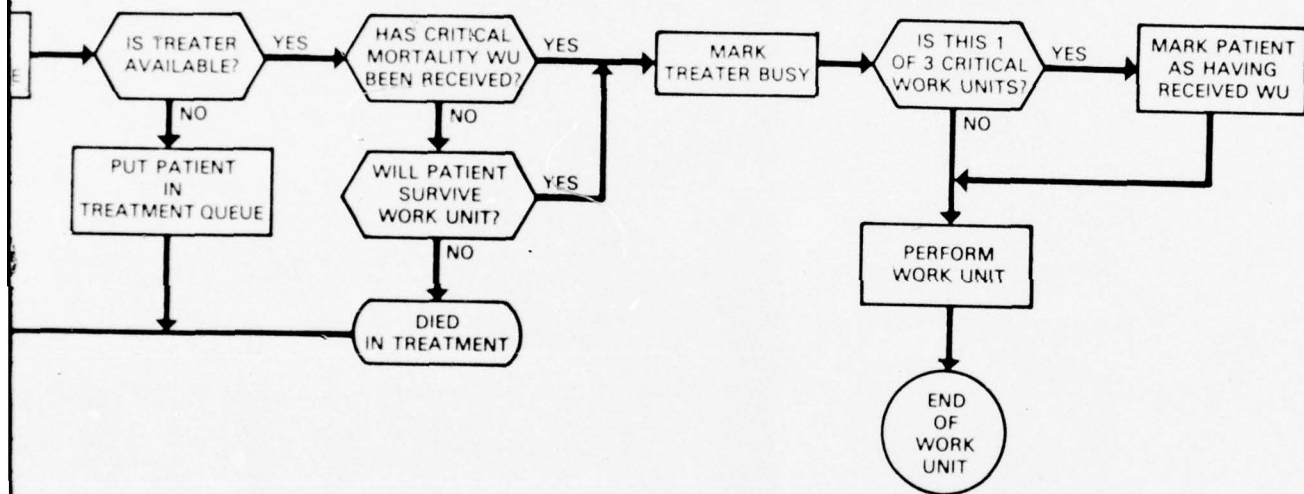
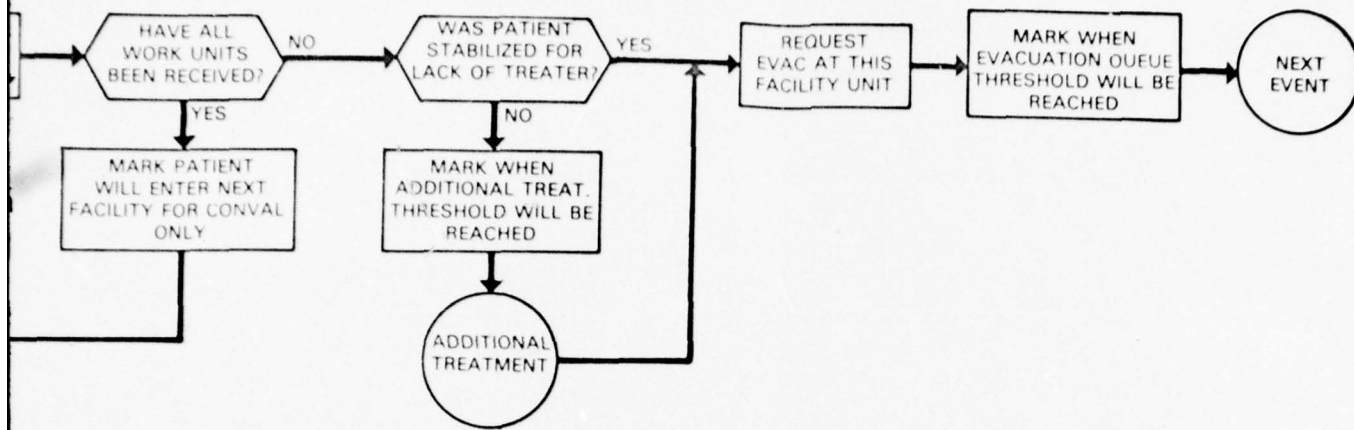


Fig. 2(a) — Patient treatment pattern





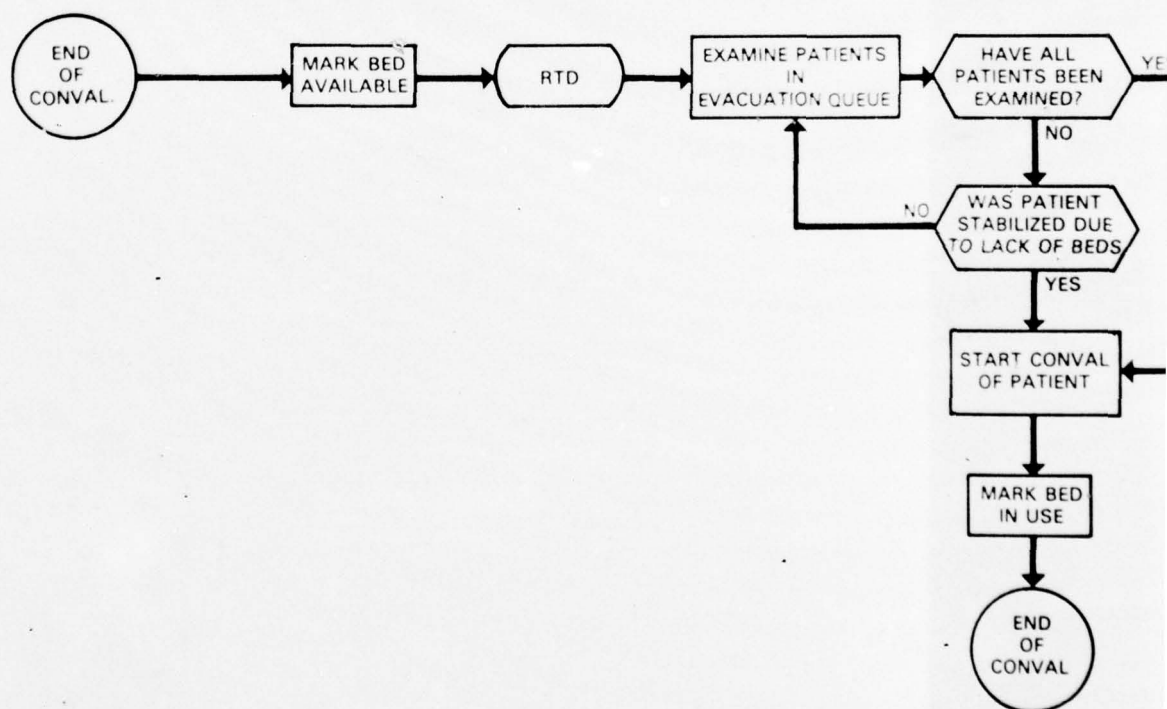
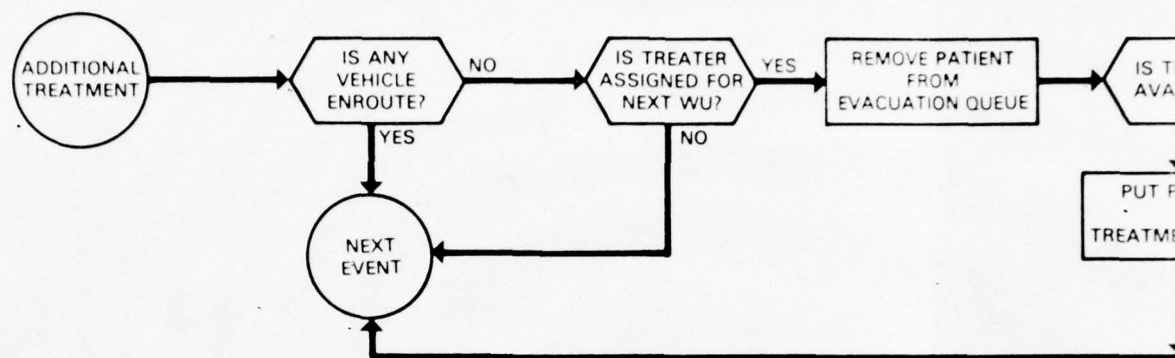
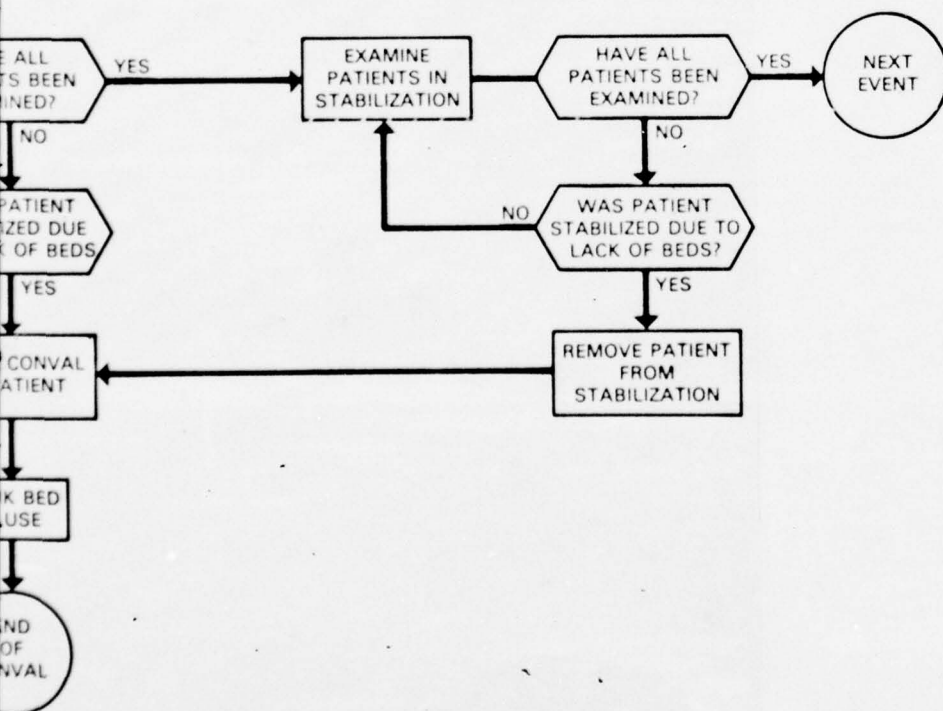
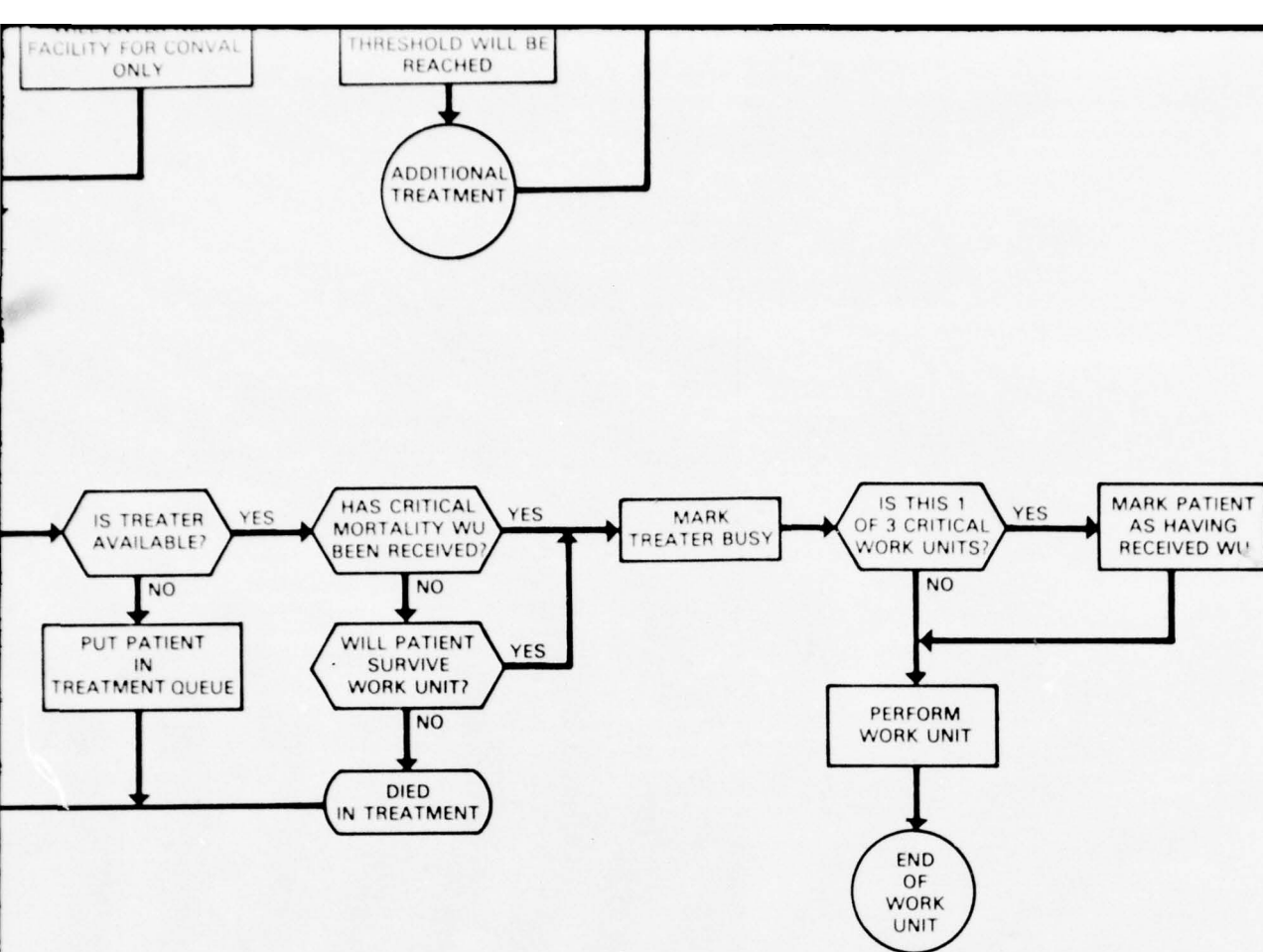


Fig. 2(b) (Continued)



2(b) (Continued) — Patient treatment pattern within a facility

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these factors enter a patient's processing within the NAMES II Model is considered to be logical -- if necessary treaters are not assigned, the patient must go elsewhere for treatment; once his First-Aid Work Unit is received and he can be moved safely, he should be evacuated as soon as possible if it is known that he must be evacuated anyway; finally, if his facility has enough convalescent beds allocated, and if his convalescent time falls within the evacuation policy of the facility, he should be retained at this facility and returned to duty, and not evacuated further to the rear.

The NAMES II Model is capable of simulating the patient evacuation process using two classes of vehicles, air and ground. Either class may be stationed at any casualty receiving facilities and/or at a central dispatch location or pool. The number of vehicles in each class is specified by the user, as well as the vehicle speed and capacity. The model currently treats the first class as ground ambulances, and the second as helicopters. An ambulance operates twenty-four hours a day. A helicopter operates during daylight hours* only, unless it is responding to a request to evacuate an urgent patient. In that case it will fly at any time.

New features which have been incorporated in the NAMES II Model enable users of the model to specify various rules for the employment of medical evacuation vehicles, both helicopters and ground vehicles. This allows the user to test different medical regulating procedures.

These rules may be selected by the user for each facility level within the medical evacuation chain. Having already specified the geographic location of each facility level, the number and type of evacuation vehicles assigned to each facility, the number of beds available, the evacuation policies, the medical treaters (surgeons, corpsmen, etc.) as well as the classes of patients who can receive treatment at each level, the user first designates, for each facility level, other locations from which evacuation vehicles may be requested. These vehicles may be at this facility, at other facilities, or in a central pool. The user then selects one of various rules that governs which patients will be loaded on an evacuation vehicle if this particular facility is the first pick-up stop for that vehicle. He also selects the destination of the vehicle. If this is the second stop for an evacuation vehicle which already has patients on board, the user may decide who is to be unloaded, which patients at this facility are to be put on board the vehicle after it is unloaded, and what the vehicle's next destination should be. The user also has the option to make similar inputs if this particular facility is the third or subsequent stop for a medical evacuation vehicle.

A relatively simple format has been prepared to assist the user in preparing these inputs.** Typical rules which users of the NAMES II Model might want to test are shown on the following page.

* As specified by the user.

** A sample format is contained in Appendix B.

Rules that govern facility levels from which evacuation vehicles may be requested.

- R1 - closest support facility (including requesting facility).
 - R2 - closest support facility that has a vehicle available (including requesting facility).
 - R3 - pool.
 - R4 - first from the pool; if none available, from the closest support facility that has a vehicle available.
 - R5 - first from the support facilities, starting with the closest; if none available, from the pool.
 - R6 - from user-selected support facility.
 - R7 - next facility to the rear.
- (all of these rules can be included at once by listing each choice of facility in order of preference)

Rules that govern which patients are loaded on a vehicle.

- L1 - none.
- L2 - all who will fit, by priority.
- L3 - selected priorities only.
- L4 - patients who are designated to go to facilities which have been designated for patients already on board.

Rules that govern vehicle non-stop destination.

- D1 - home facility. (user specified)
 - closest support facility. (user specified)
 - other facility designated by user.
- D2 - remain at present facility to await evacuation request.
- D3 - closest facility to which any patient is designated to go.
- D4 - as far to the rear as required by any patient.
- D5 - support facility required by patient with highest priority.

Rules that govern which patients are unloaded from an evacuation vehicle at a vehicle destination.

- U1 - none.
- U2 - all.
- U3 - those patients designated for evacuation to this facility, either by the user (patient class) or by the model (patients evacuated from the next lower level).
- U4 - designated priorities.

Users may also want to force certain procedural policies upon the system, and these may in turn restrict the employment of evacuation vehicles. Such restrictions may include the following:

1. Restrict the type of evacuation vehicle to be employed at each facility level, e.g., only ground ambulances at the FEBA.

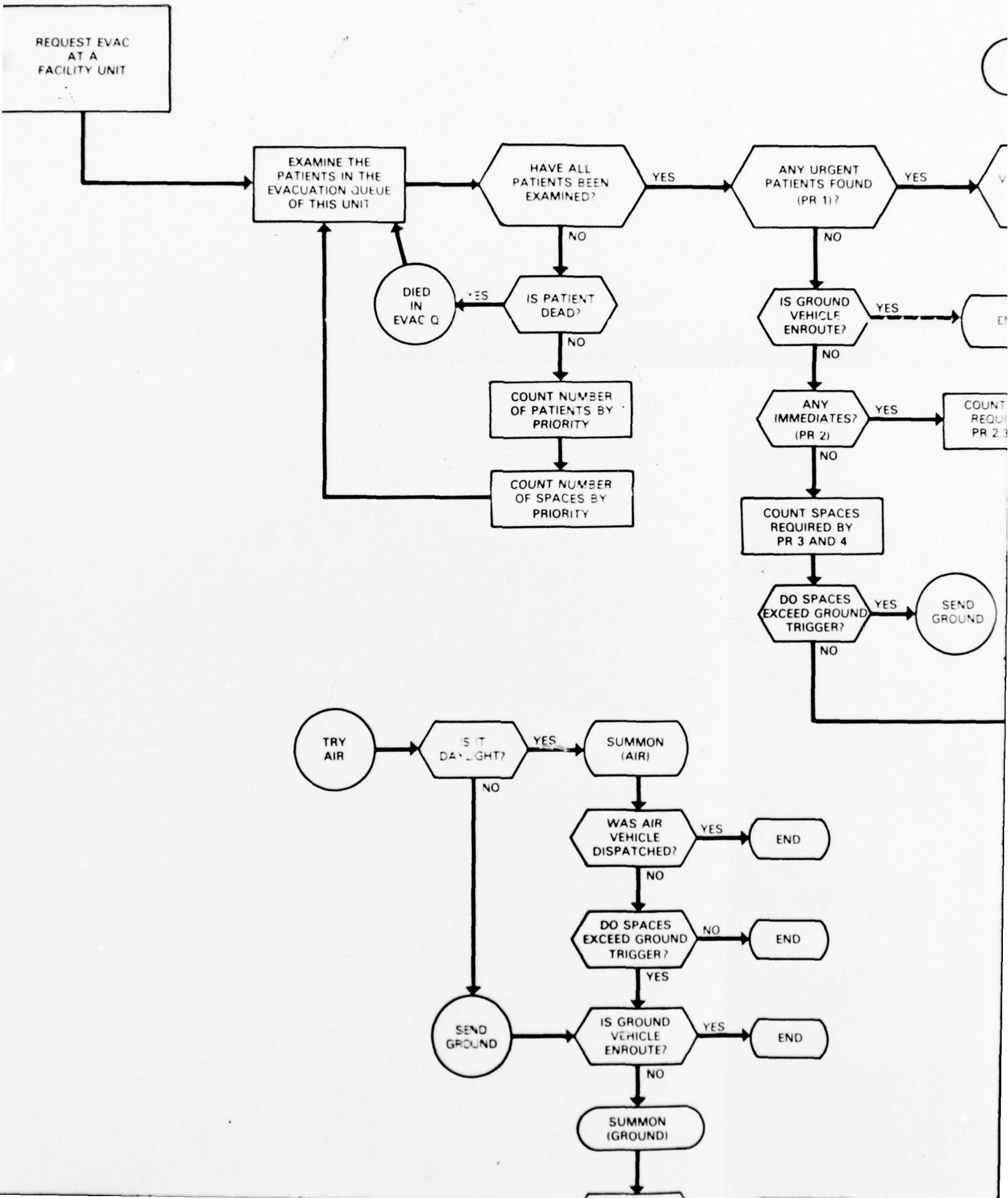
2. Restrict the destinations that can be reached directly from each facility level.
3. Restrict the patient priorities that can use each type of evacuation vehicle.
4. Specify that patients with certain priorities must be evacuated to a specified user-selected facility.
5. Specify that a particular patient class must be evacuated to a specific user-selected facility.

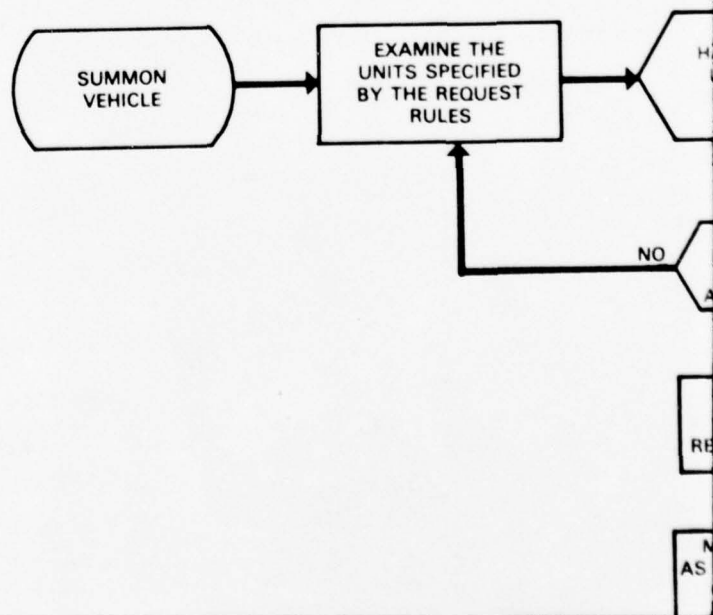
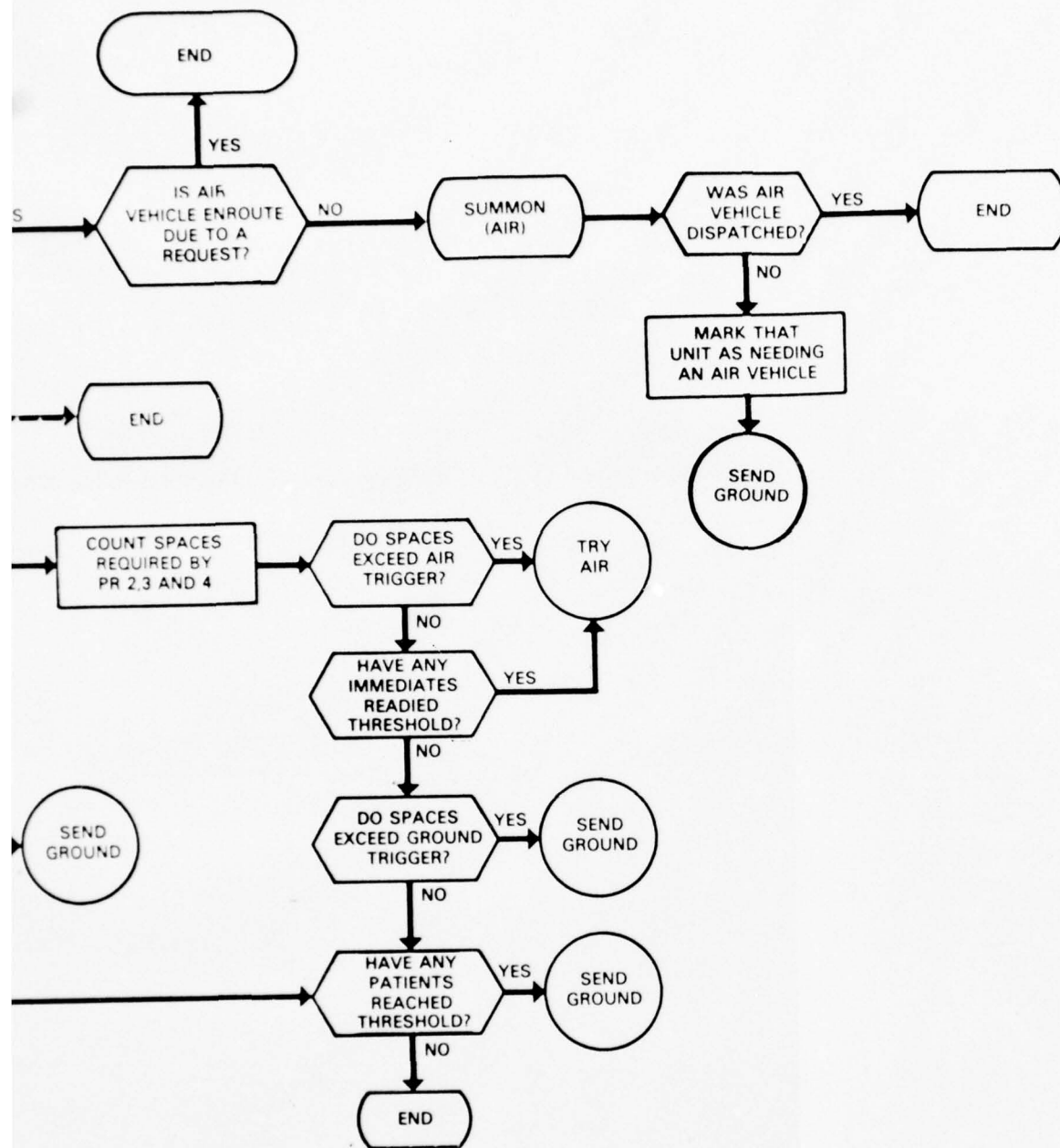
There is no conflict between these restrictions and the rules which the user may select for the employment of the evacuation vehicles. Any of these restrictions can be included in the model by selecting the appropriate vehicle employment rule or by the user option of designating the number and type of vehicles assigned to each facility level.

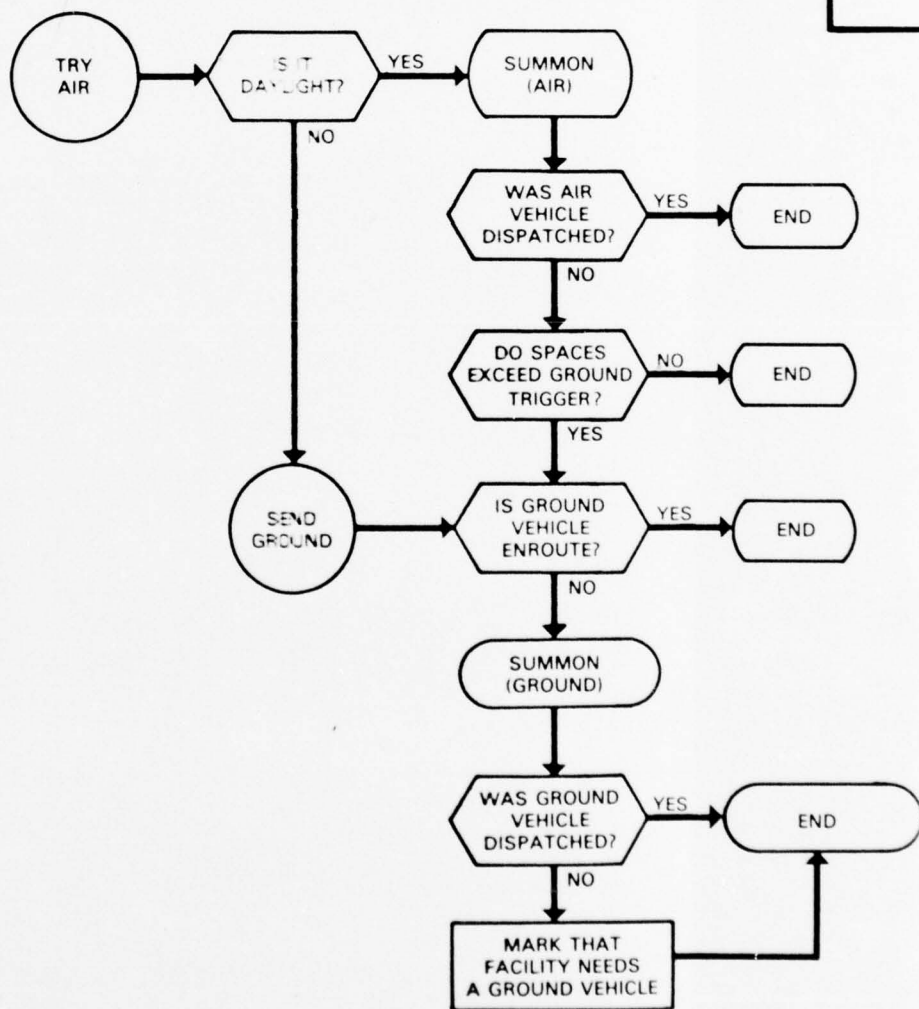
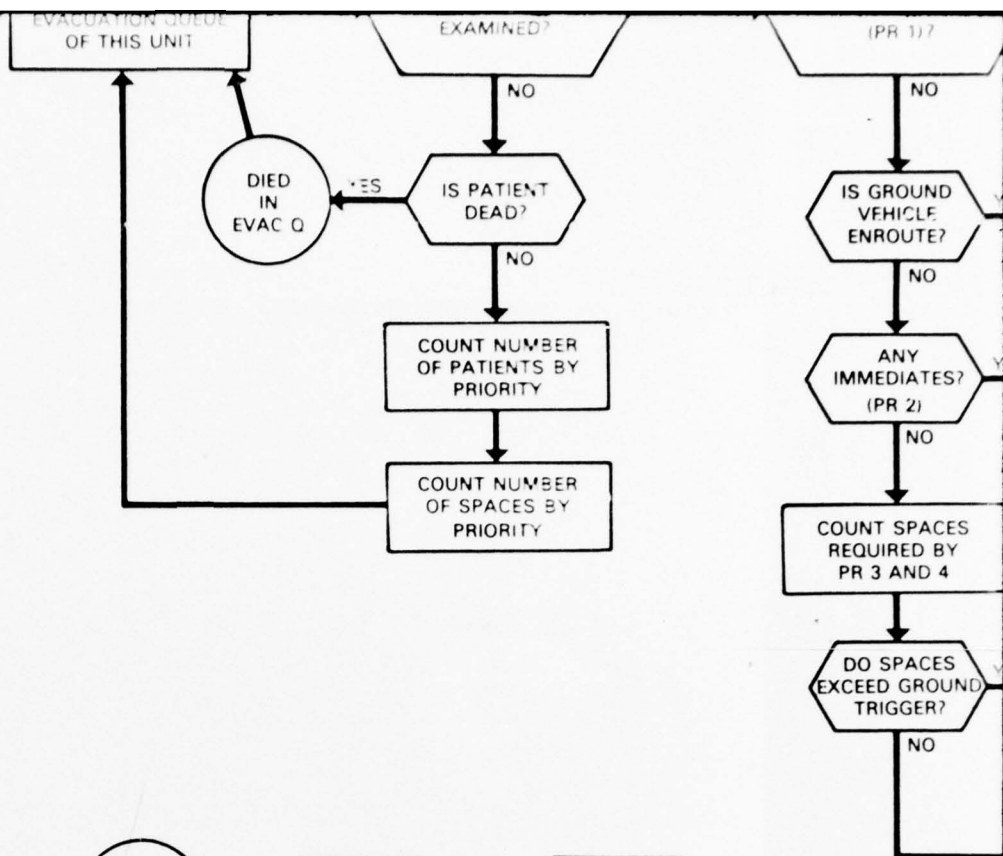
The NAMES II logic which governs the procedures for requesting an evacuation vehicle is described in Figure 3. The REQUEST EVAC logic of Figure 3, together with the VEHICLE ARRIVAL logic (Figure 4) for loading, unloading and dispatching vehicles are incorporated in NAMES II and must be understood by the user to avoid conflicts with the user-selected rules for the employment of evacuation vehicles. The REQUEST EVAC routine is summoned by the model whenever

1. a patient enters an evacuation queue,
2. a patient's waiting time in the evacuation queue exceeds an interval, specified by the user, which is called the patient's evacuation threshold time,
3. A vehicle departs from a facility with patients still waiting in the evacuation queue.

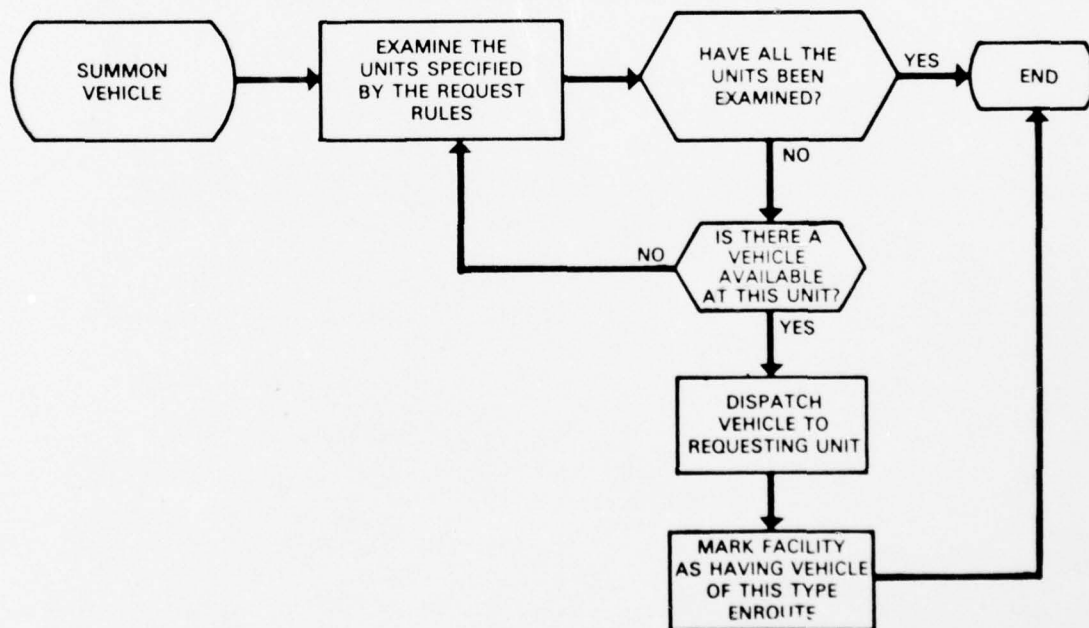
Each patient, according to the priority assigned to his class, is assigned an evacuation threshold time by the user. As soon as his waiting time in an evacuation queue reaches his assigned threshold time, an evacuation vehicle is requested. In the current NAMES II Model, this threshold time must be zero for urgent (Priority 1) patients, but the user may select the threshold times for patients having other priorities. As Figure 3 indicates, a helicopter is always requested first for an urgent patient, and if a helicopter is not available, a ground vehicle (ambulance) is requested. A helicopter is also the first choice for Priority 2 patients, but if no Priority 1 or Priority 2 patients are waiting, only ambulances are requested. Figure 3 also shows how the number of patients or spaces waiting to be evacuated "triggers" requests for air or ground vehicles. The air and ground "trigger" spaces are specified by the user. It is always assumed that an ambulatory patient occupies one space on an evacuation vehicle; a litter patient occupies two spaces.



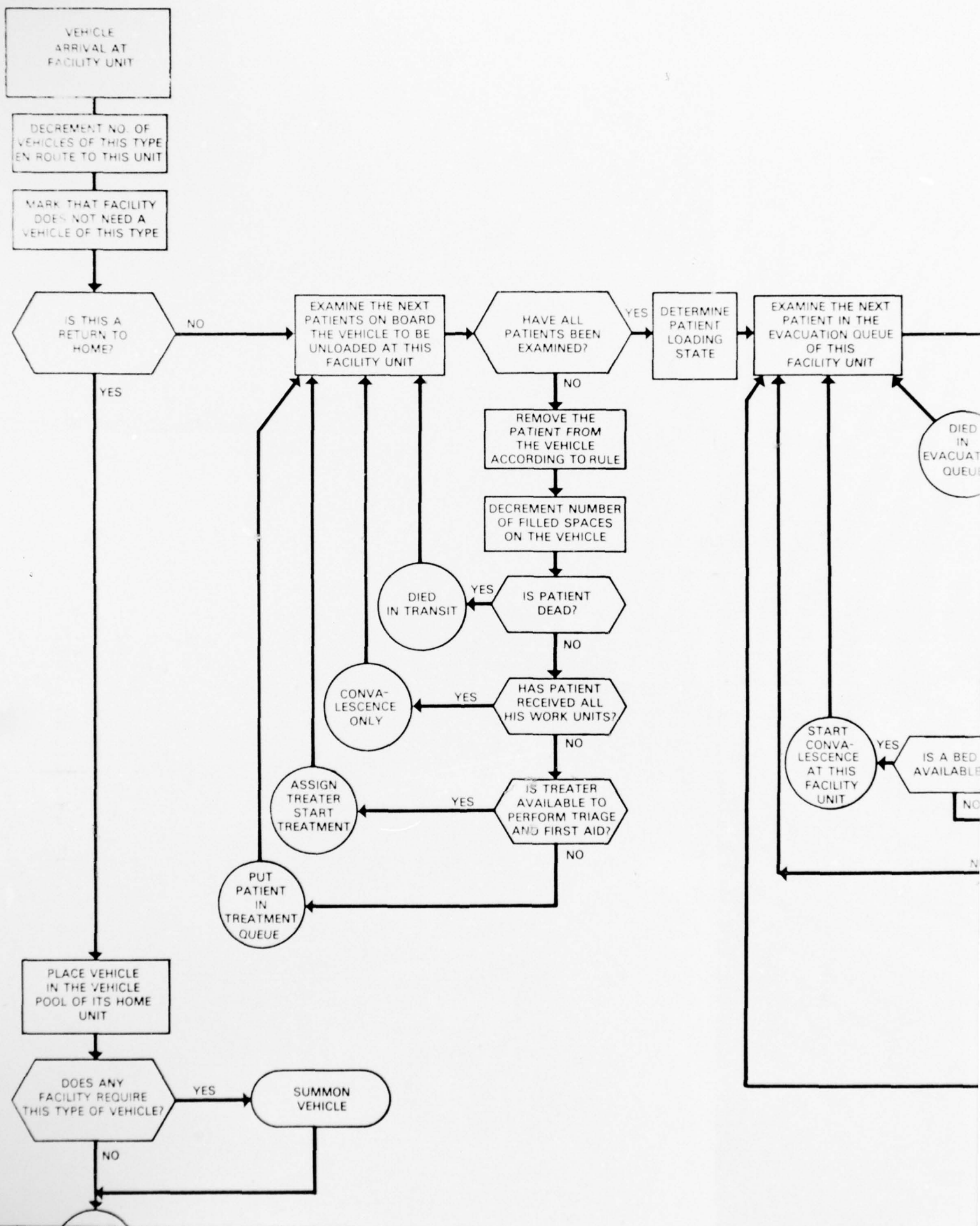


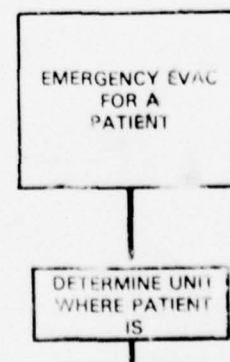
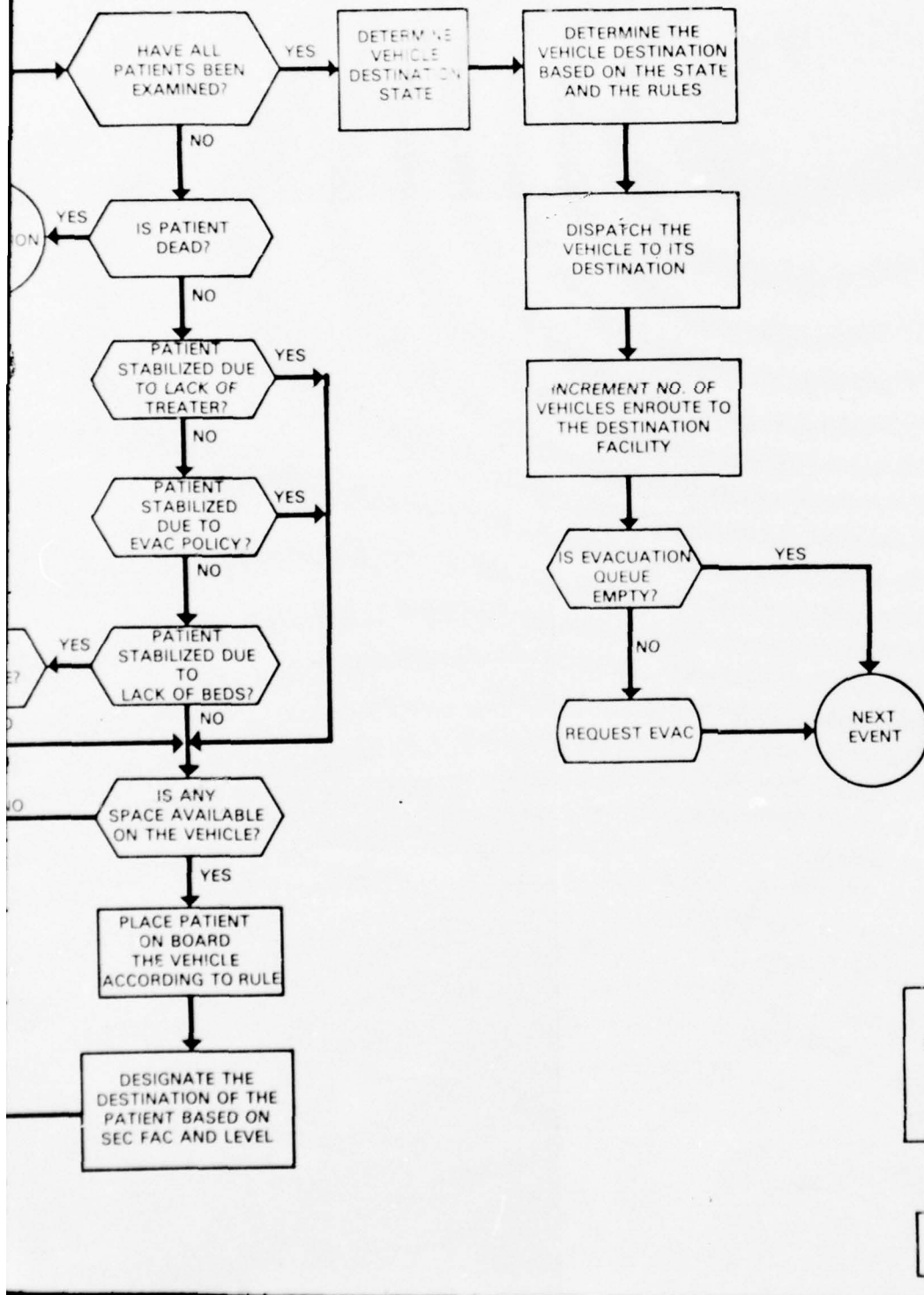


3



ation vehicles





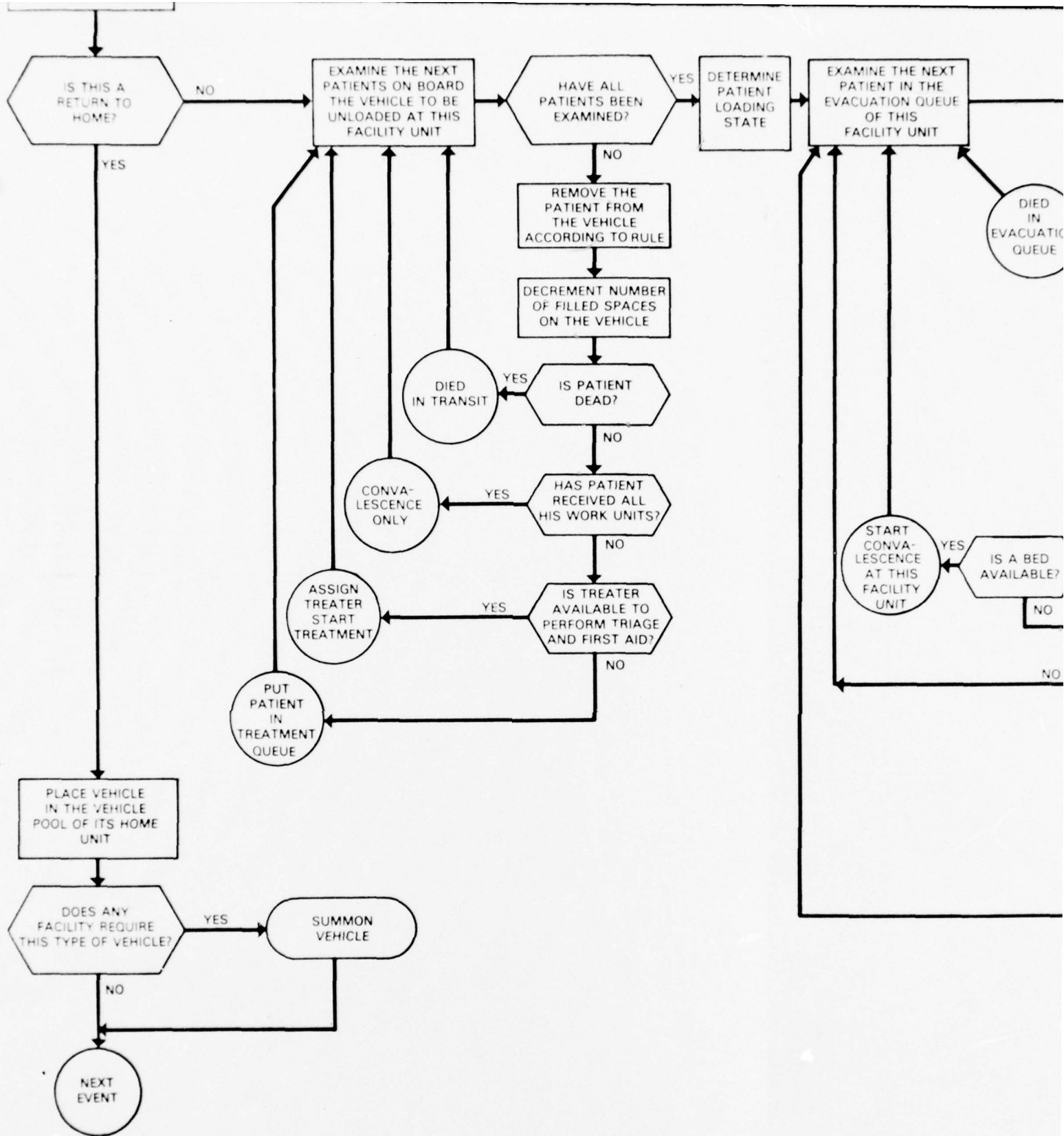
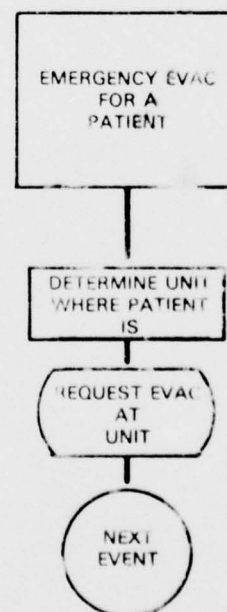
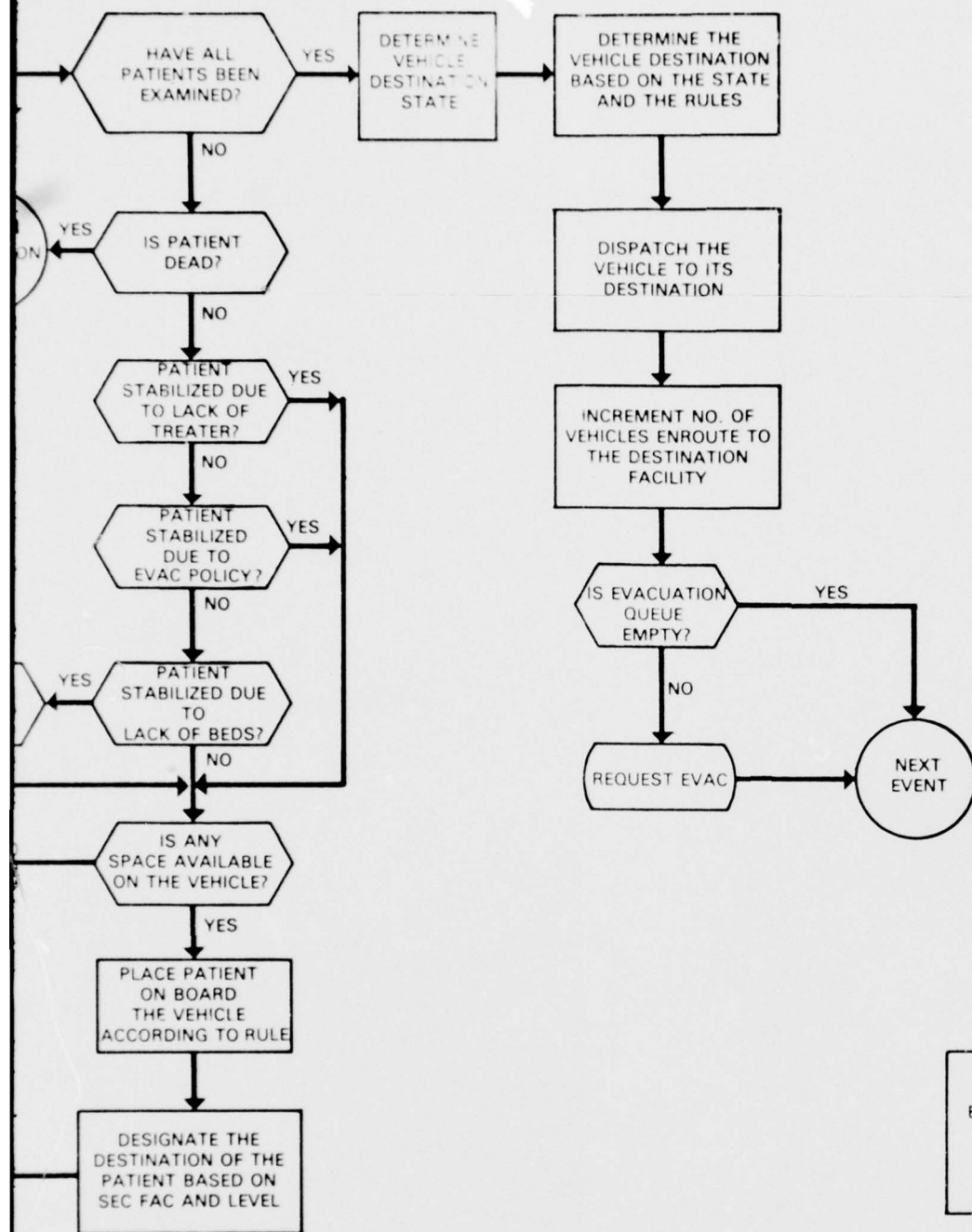


Fig. 4 — Logic for loading, unloading and dispatch



ing evacuation vehicles

The NAMES II Model incorporates a feature that enables all patients awaiting evacuation to receive additional medical attention if transportation is delayed, provided appropriate treaters are assigned to the facility. In addition to the evacuation threshold times which trigger a request for a vehicle to pick up patients if they have been waiting too long, all patients (including outpatients) are assigned an "additional treatment" threshold time. If this time is exceeded before a vehicle has been dispatched to the waiting patient's facility, the patient will leave the evacuation queue and undergo additional treatment, provided the appropriate treater is assigned to the facility. Otherwise the patient is left to wait for the arrival of the vehicle. If he dies while awaiting transportation, he is not placed in the vehicle but is counted as having died at this facility. If he is alive when the vehicle arrives, but dies in transit, he is counted as having died enroute to his next receiving facility.

NAMES II also contains an added feature which helps reduce the number of patients evacuated because of convalescent bed shortages. Whenever a patient is returned to duty from a facility's convalescent ward, making a bed available, the facility's evacuation queue is searched for patients who are there because of the shortage of convalescent beds. Amongst such patients, the highest priority patient is removed from the evacuation queue and transferred to the empty convalescent bed. He will subsequently be returned to duty, instead of being evacuated from the facility. If the evacuation queue contains no patients who are being evacuated because of the bed shortage, a search is next made for patients who are being stabilized because of the convalescent bed shortage at the facility. If there are any such patients, the one who is due to leave stabilization next (to enter the evacuation queue) is immediately transferred to the empty convalescent bed, and will subsequently be returned to duty. Other rules could be adopted for removing such patients from stabilization or from the evacuation queue, such as selecting the patient with the shortest convalescent time.

When a patient is evacuated from any facility, his destination is designated to be his user-selected second facility if his present facility is closer to the FEBA than his second facility. Otherwise, his destination is designated to be the next facility to the rear. Depending on the vehicle destination rules in force, the vehicle which is evacuating the patient may or may not stop next at the patient's designated destination, and, depending on the patient unloading rules in force, the patient may or may not be unloaded at the vehicle's next stop. Wherever the patient is unloaded next, he will remain until he dies, or returns to duty, or until one of the three conditions is met to force his stabilization and evacuation.

The vehicle destination rules and the patient unloading rules always prevail over the patient's designated destination. If the patient is unloaded at a facility closer to the FEBA than his designated destination, his next designated destination, if he has to be evacuated again, will be the same as it was before, that is, to his second facility if he hasn't already been there, or else to the next facility to the rear. If he is

unloaded at his designated destination or at a facility further to the rear than his designated destination, then his next designated destination, if he has to be evacuated, will be the next facility to the rear.

In the NAMES II Model, it is assumed that patients who are evacuated from the facility level furthest from the FEBA will be transferred to staging facilities for air evacuation out of the combat zone. These staging facilities are not currently included in the evacuation chain simulated by the model; hence, evacuees from the last facility level are removed from the simulation once they enter the evacuation queue at that facility. They are never placed on board any of the evacuation vehicles which service the simulated evacuation chain.

NAMES II INPUTS

The Model is "driven" by many user-specified parameters, or inputs, which describe the principal elements of the medical evacuation system. These inputs, which are listed below, are not dependent upon historical data. If the user wishes to use the model to simulate historical situations, then certain inputs, such as the average number of patients admitted each day, could be provided from historical data.

Instructions for the correct preparation of these inputs are contained in Appendix B, together with illustrative examples from the NAMES II baseline simulation. All of the baseline simulation input parameters are described in Appendix A, and all of the computer reports of the baseline simulation inputs are contained in Appendix C.

Operational (Tactical) Inputs

- Distances between the FEBA and each medical facility level, including the evacuation vehicle pool
- Average number of battle casualties each day -- inpatients and outpatients
- Proportional distribution of battle casualty arrivals for each hour of the day -- inpatients and outpatients
- Proportional distribution of battle casualties entering the evacuation chain at each facility level -- inpatients and outpatients
- Proportional distribution of battle casualties among the patient classes -- inpatients and outpatients
- Number of combat days
- Hours of dawn and dusk

Physical Resources Inputs

- Number of medical facility levels
- Number of medical facility units at each level
- Types of medical personnel (treaters) assigned to each facility unit, together with the numbers of each type assigned
- Quantities of evacuation vehicles, by type, assigned to each facility unit, including the pool, together with the vehicle capacities, by

type (one space for an ambulatory patient, two spaces for a litter patient)

- Speed of evacuation vehicles, by type, between each medical facility level
- Convalescent bed capacity at each facility unit.

Medical Technology Inputs

- Patient class descriptions
- Work unit descriptions
- For each patient class:
 - priority
 - mobility factor (probability that the patient will be ambulatory)
 - mortality threshold time at patient's entry facility
 - critical mortality work unit allowable delay time
 - critical convalescent work unit allowable delay time
 - sequence of work units to be performed, listed in order of treatment
 - first-aid work unit
 - critical mortality work unit
 - critical convalescent work unit
 - convalescent time probability distribution
- For each work unit:
 - preferred and alternate treaters and respective treatment times
- For each patient priority:
 - stabilization time prior to evacuation
 - evacuation threshold time
 - additional treatment threshold time
- Factor by which patient's original convalescent time is increased if his critical convalescent work unit is not completed in the allowable delay time.

Command and Control Inputs

- Number of non-urgent casualties in an evacuation queue that triggers a request for each type of evacuation vehicle
- Evacuation policy for each facility unit
- The patient's second facility level (SECFAC) following evacuation from his entry facility
- Rules for the employment of evacuation vehicles at each facility level:
 - levels from which vehicles, by type, are requested
 - patients unloaded from arriving vehicles, by vehicle type
 - patients loaded on departing vehicles, by vehicle type and state, i.e., vehicle empty or not, and other vehicle enroute or not
 - departing vehicles' destinations, by vehicle type and state, i.e., vehicle empty or not

NAMES II OUTPUTS

The NAMES II Model computes and prints daily and cumulative statistics at intervals desired by the user, together with summary statistics following the last day of combat and again after all patients have left the system. This output data, which is listed below, provides the model user with a quantitative method of observing various measures of the effectiveness of specific medical evacuation systems. This permits the relative comparison of different evacuation systems, and also shows the sensitivity of an evacuation system to the various design parameters or inputs. The output data includes patient dispositions, measures of lost time due to injuries and illness, measures of resource requirements, and measures of resource utilization. Appendix D contains sample computer reports of the NAMES II baseline simulation outputs.

Daily and Cumulative Reports

- Numbers of casualties, listed by facility level and patient priority, who
 - entered that level directly,
 - were evacuated to that level,
 - returned to duty without convalescence,
 - returned to duty with convalescence,
 - died during treatment,
 - died in a treatment queue,
 - died in an evacuation queue,
 - died enroute (in transit) to that facility level,
 - remained at that level at midnight,
 - remained in stabilization at that level at midnight,
 - remained in convalescence at that level at midnight,
 - entered convalescence,
 - had their convalescent time increased,
 - were stabilized because a required treater was not assigned,
 - were stabilized because their convalescent time exceeded the evacuation policy,
 - were stabilized because of the shortage of beds,
 - were evacuated from that facility level.
- Numbers of inpatients and outpatients, listed by facility level and work units, who required each work unit; the number of times preferred or alternate treaters for each work unit were assigned to the facility when first requested; the number of times preferred or alternate treaters for each work unit were available when first requested; and the number of patient deaths due to excessive delays in receiving each critical mortality work unit.
- Numbers of patients, listed by facility level and convalescent times, who
 - required beds,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the facility evacuation policy, or because of the shortage of beds,
 - remained in stabilization at midnight,

- entered convalescence,
- arrived for convalescence only,
- remained in convalescence at midnight.
- Number of round trips completed by each evacuation vehicle which was assigned to each facility unit, including the pool; the length of time each vehicle was in use; the average trip time for each vehicle; the daily average occupancy (number of patients) of each vehicle; and the average occupancy of each vehicle taken over all time to date.
- Number of requests made by each facility level for each type of evacuation vehicle, and the number of such requests which were honored (vehicle dispatched).
- Number of requests placed on each facility level and the pool for each type of evacuation vehicle, and the number of such requests which were honored (vehicle dispatched).
- Number of pick-up trips made by each type of evacuation vehicle to each facility level in response to requests made by that facility level. Vehicles always arrive at the requesting facility empty on pick-up trips.
- Number of stops made by each type of evacuation vehicle at each facility level for reasons other than to comply with pick-up requests. These stops "enroute" are of two classes only: patient unloading stops, with possible reloading; and stops which mark the vehicle's return to its home facility.

Summary Reports

- Exact number of inpatient arrivals and outpatient arrivals into the evacuation system during each hour of each day of combat.
- Total numbers of inpatients and outpatients, listed by facility level and work units, who required each work unit; the number of times preferred or alternate treaters for each work unit were assigned to the facility when first requested; the number of times preferred or alternate treaters for each work unit were available when first requested; and the numbers of patient deaths due to excessive delays in receiving each critical mortality work unit.
- Total numbers of patients, listed by facility level and convalescent times, who
 - required beds,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the facility evacuation policy, or because of the shortage of beds,
 - remained in stabilization at midnight,
 - entered convalescence,
 - arrived for convalescence only,
 - remained in convalescence at midnight.
- Numbers of patients, listed by facility level for each day following D-Day (beginning of combat), who
 - were admitted to the facility level, either by direct entry or by evacuation from another level,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the

- facility evacuation policy, or because of the shortage of beds,
 - entered convalescence,
 - arrived for convalescence only,
 - had their convalescent time increased,
 - remained in stabilization at midnight,
 - remained in convalescence at midnight.
- Numbers of beds required, occupied, and assigned to each facility level for each day following D-day.
- Number of beds required outside the combat zone for each day following D-day.
- Numbers of patients, listed by facility level for each day following D-day, who
 - entered the facility level directly,
 - were evacuated to the facility level from another level,
 - returned to duty without convalescence,
 - returned to duty with convalescence,
 - died,
 - were evacuated,
 - remained at that level at midnight.
- Total numbers of inpatients and outpatients, listed by patient class, who
 - entered the evacuation system,
 - returned to duty,
 - were evacuated out of the combat zone,
 - died.
- Total numbers of patients, listed by number of days spent in the evacuation system, who
 - returned to duty,
 - died,
 - were evacuated out of the combat zone.

NAMES II BASELINE SIMULATION

The medical treatment and evacuation system simulation used as the baseline for comparative analysis was designed to represent a system which might support a U.S. Marine Corps combat division. While NAMES II inputs are not dependent upon historical data, many of the baseline simulation inputs conform to actual information obtained from the Army, Navy and Marine Corps. This was done in order to test the capability of NAMES II to produce realistic results when simulating realistic conditions. Table A-1 of Appendix A* shows the average daily number of battle casualties (inpatients) used in the baseline simulation. These battle casualties represent actual Marine Corps casualties of the Korean Chosin Reservoir Campaign in 1950. In addition to these inpatients, the number of outpatients per day was assumed to be constant at 150 throughout the 15-day conflict. Thus the total patient load thrust upon the baseline system during the 15-day combat period was in excess of 5000.

The configuration of the baseline system is illustrated in Figure 5. There are 360 medics supporting the combat forces at the FEBA; 10 medics

* Tables A-1 through A-9 and Figures A-1 and A-2 appear in Appendix A.

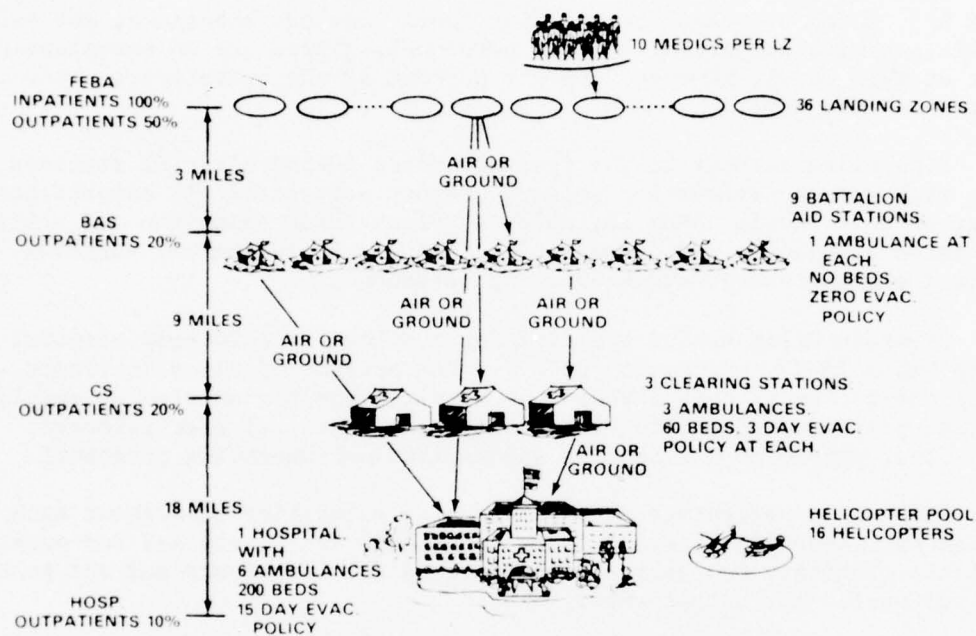


Fig. 5 — NAMES II baseline simulation operational area, showing possible evacuation routes

are assigned to each of 36 evacuation terminals or landing zones (LZ). All of the inpatients and 50 percent of the outpatients enter the system at this level. All of these inpatients who survive their initial treatment are evacuated to the rear for additional treatment. The outpatients who enter the system at the FEBA return to duty after receiving first aid; none of them die.

Three miles behind the FEBA are nine battalion aid stations (BAS). Each BAS, which services four landing zones, has one ambulance, and two physicians with supporting medical personnel. There are no convalescent beds at this level, however. Twenty percent of the outpatients enter the system at this level.

Nine miles further to the rear are three 60-bed clearing stations (CS), each with a 3-day evacuation policy. Twenty percent of all outpatients enter at this level. Each CS, which services three battalion aid stations, has three ambulances and 44 medical personnel, including two surgeons, two general practitioners, and supporting personnel.

Eighteen miles behind the clearing stations is a 200-bed hospital which has a 15-day evacuation policy. Ten percent of all outpatients enter the system at this level. The hospital has six ambulances and 131 medical personnel, including two surgeons, six general practitioners, five other physician and dentist specialists and supporting personnel.

The hourly percentage distributions of casualties throughout each combat day, shown in Figure A-1 for inpatients and Figure A-2 for outpatients, indicate two peak arrival periods for inpatients and one peak arrival period for outpatients.

Each patient was assigned to one of 75 classes, which were defined by the U.S. Army Academy of Health Sciences, [2] and correspond to diagnostic codes defined in the U.S. Department of Defense Disease and Injury Codes. These patient classes encompass those wounded in action (WIA's) as well as diseased and non-battle injury (DNBI) patients, and also include outpatients as well as inpatients. The proportional distributions of patients among the 75 classes is shown in Table A-2. This data came from Army and Navy Vietnam records. The descriptions of these patient classes are contained in Table A-4. Treatment parameters for each patient class are described in Table A-5. The patient priority assigned to each class, and the litter or ambulatory status of each class, were obtained from the U.S. Army Academy of Health Sciences. [3] Other inputs which somewhat resemble data prepared by the Academy of Health Sciences and used in the U.S. Army Medical Planning Factors Study (MEDPLN) [3] are the treater descriptions (Table A-3), the work unit descriptions (Table A-6), and the treaters and treatment times associated with the work units (Table A-7). The MEDPLN Study, however, did not include such definitive care work units as major debridement or surgery, nor did it consider the NAMES II concepts of first-aid work units, critical mortality work units, critical convalescent work units, allowable delay times to complete these work units, and mortality threshold times at the patient's entry facility.

Therefore, the NAMES II baseline simulation work units (Table A-6) and associated treaters (Table A-7) cover a more complete patient treatment capability, which is reflected in the sequences of work units designated for each patient class (Table A-5) in the NAMES II baseline simulation. The critical treatment threshold times and work units for the baseline simulation are listed in Table A-8. The treater descriptions and assignments (Table A-3) conform to U.S. Navy standards, and each patient's second facility level (SECFAC) following evacuation from his entry facility is listed in Table A-9. These represent the closest facilities to the FEBA at which appropriate treaters are assigned to perform all work units required by the respective patient classes. By specifying each patient's SECFAC this way, no patient will be designated to go further to the rear than necessary for treatment. Other criteria could have been used in designating the SECFAC facilities chosen for the baseline simulation.

The convalescent time cumulative probability distribution associated with each patient class was based on U.S. Army Vietnam data, and is contained in Appendix C. Each patient's convalescent time is doubled, in the baseline simulation, if his critical convalescent work unit is not completed in the allowable delay time specified in Table A-8.

Additional medical technology inputs, indirectly linked to patient class via priority, are the times a patient spends in stabilization prior to evacuation to a higher facility, and the maximum times that patients are allowed to wait in an evacuation queue before requesting a special evacuation vehicle or receiving additional treatment. In the baseline simulation, stabilization times were 24 and 12 hours for urgent and immediate patients, respectively, and 0 hours for routine patients and outpatients. Threshold times for evacuation were 0 and 1 hour for urgent and immediate patients, respectively, and 24 hours for routine patients and outpatients. Analogous times for additional treatment were 20 minutes, 1 hour and 20 minutes, and 24 hours and 20 minutes, respectively.

Within the evacuation chain of the baseline simulation, ambulances (capacity: 8 spaces; speed: 25 mph) are requested from the closest support facility that has any available, including the requesting facility itself. Helicopters are provided only by a central pool, adjacent to the hospital, which contains 16 helicopters (capacity: 24 spaces; speed: 100 mph). The NAMES II Model logic requires that a helicopter be requested when a single urgent patient enters a facility's evacuation queue, unless a helicopter is already enroute to the facility in response to an earlier request for a helicopter. If a helicopter is not available to respond to such a request, a ground vehicle (ambulance) is immediately requested unless an ambulance is enroute to the facility in response to an earlier request for an ambulance. For non-urgent patients, the number of patient spaces (one required for an ambulatory patient, two required for a litter patient) in an evacuation queue that are necessary to trigger a request for a helicopter is six, and for an ambulance it is two. Helicopters are always dispatched at any time, day and night, to pick up Priority 1 (urgent) patients in the NAMES II Model; for all other patients, helicopters respond only in daylight, which was prescribed, in the baseline

simulation, to be the period from 6 a.m. to 6 p.m. (0600 to 1800). Helicopters are always the model's preferred mode of travel in the evacuation chain for Priority 1 and Priority 2 patients; however, in the baseline simulation, all patients are evacuated from the FEBA, battalion aid stations and clearing stations by whichever kind of vehicle arrives first, whether it be helicopter or ambulance. Patients are put aboard the vehicle by priority, and it then proceeds to the closest facility to which any patient on board is designated to go, either by the user (patient class) or by the model (patient evacuated from the next lower level). At each stop, only those patients designated for evacuation to that facility are unloaded. The evacuation vehicle then takes on board, by priority, all who will fit and proceeds again to the closest facility to which any patient is designated to go. This procedure, together with the patient flow rules contained in the NAMES II Model, forces evacuation vehicles in the baseline simulation to proceed always in a direction away from the FEBA. Each vehicle returns home when it unloads its last patient and there are no further patients waiting to be evacuated.

Appendix C contains computer reports of all inputs used in the baseline simulation. Daily and cumulative statistics were printed each day of the 15-day combat period. Summary statistics were printed after the 15th day, and again 15 days later, at which time no patients remained in the evacuation system. (The last patient entered the system on the 15th day, and the hospital evacuation policy was 15 days). Appendix D contains sample computer reports of the baseline simulation outputs.

RESULTS

The NAMES II outputs which will be of greatest interest to a user will depend on his objectives for using the model. However, the value of the information which the user will get out of the model will depend considerably on the sensitivity of certain model outputs to changes in model inputs which describe the medical evacuation systems the user is studying. It is possible for some inputs to dominate results to such an extent that other inputs have little effect on model results (just as in real life), and if the user does not understand what is happening, he may draw wrong conclusions about the importance of these inputs in general.

For example, if the patient "mix" is such that a great many patients have critical mortality work units and the allowable delay time for receiving these work units is very short, then the mortality rate might be very high despite significant changes in the number and speed of evacuation vehicles and the number of medical personnel assigned to the facilities. Simulations with such a patient "mix" will show few requirements for resources such as convalescent beds. By the same token, if only a very small number of patients have critical mortality work units and the allowable delay time for receiving them is very long, then the mortality rate may be very low despite significant changes in the types and numbers of medical personnel assigned to facilities. Under these circumstances, more types of treaters at a facility will have the result that fewer patients are evacuated from the facility and more are returned to duty.

NAMES II prints reports describing all user inputs for each simulation, and the user should examine these reports to detect inputs which may cause certain model outputs to be insensitive to changes in other inputs.

A total of 5706 patients, of whom 3595 were inpatients and 2111 were outpatients, entered the simulated evacuation system in the NAMES II baseline simulation. The patient "mix" and the associated work units were such that about 9% of all patients required immediate emergency first aid in order to survive (patients designated as having a mortality threshold time); 63% of all patients would die if they did not receive specified critical mortality work units in time, but in all these cases, it was possible to save the patients if evacuation procedures and resources were adequate. Thus the mortality rate was very sensitive to changes in treater assignments, evacuation vehicle availability, and medical regulating procedures. The patients who had critical mortality work units also had first aid work units to assure that they would not be evacuated before it was medically safe, provided necessary treaters were assigned to their facility. The 37% of all patients who had no critical mortality work units also had no first aid work units, since they all had lesser injuries or illnesses. However, 96% of all patients had critical convalescent work units, which meant that their convalescent times would be doubled due to complications if designated work units were not administered in time. This made the number of patients who returned to duty more sensitive to factors which affected the speed of their medical care, such as remaining time in queues, vehicle speeds, and treater availability, as well as to the evacuation policies employed at the various facilities.

Using the baseline simulation configuration, resources and procedures as a standard for comparison, many other simulated evacuation systems have been examined. All the systems discussed here retained the patient loads, work units and other medical technology inputs used in the baseline simulation.

The three principal measures of patient dispositions -- the number returned to duty (RTD), the number evacuated from the combat zone (EVAC), and the number who died -- are shown in Figure 6 for the baseline simulation and six other simulations in which the number of treaters, the number of helicopters, the number of casualty receiving facilities and the evacuation vehicle employment rules were varied. These changes had their greatest impact on the mortality rate.

Increasing the number of surgical treaters from 8 to 12 at the hospital cut the mortality rate almost in half (from 4.0% to 2.3%), despite the fact that these treaters performed other functions in addition to surgery, notably triage. If there were no helicopters for medical evacuation, the mortalities rose sharply (to 13.8%). Additional simulations have demonstrated that the capacity of evacuation vehicles is relatively unimportant in the combat zone; what is vital to saving lives is that there be many high speed vehicles. The need for high speed, presently attainable only with helicopters, is obvious with a patient population

NAMES II
PATIENT DISPOSITIONS, EXPRESSED AS PERCENTAGES OF TOTAL NUMBER OF CASUALTIES
ENTERING SYSTEM DURING COMBAT PERIOD

COMPARISON SIMULATIONS	RETURNED TO DUTY	EVACUATED FROM COMBAT ZONE	DIED
BASELINE	57.5%	38.5%	4.0%
BASELINE WITH 12 SURGICAL TREATERS AT HOSPITAL, INSTEAD OF 8	57.7%	40.0%	2.3%
BASELINE WITH NO HELICOPTERS	55.4%	30.8%	13.8%
BASELINE WITH NO BATTALION AID STATIONS OR CLEARING STATIONS	48.4%	42.8%	8.8%
BASELINE EXCEPT THAT HELICOPTER DESTINATION IS THE SUPPORT FACILITY REQUIRED BY PATIENT WITH HIGHEST PRIORITY, INSTEAD OF CLOSEST FACILITY TO WHICH ANY PATIENT IS DESIGNATED TO GO	57.0%	37.1%	5.9%
BASELINE EXCEPT THAT ALL EVACUEES FROM FEBA GO BY AMBULANCE TO BATTALION AID STATION LEVEL. ONLY THOSE DESIGNATED FOR THAT LEVEL ARE UNLOADED THERE	55.6%	31.2%	13.2%
BASELINE EXCEPT THAT ALL EVACUEES FROM FEBA GO BY AMBULANCE TO BATTALION AID STATION LEVEL. THEY ARE ALL UNLOADED THERE AND REMAIN UNTIL THEY NEED A TREATER WHO IS NOT ASSIGNED OR UNTIL THEY RECEIVE THEIR FIRST AID WORK UNIT.	57.1%	36.5%	6.4%

Figure 6

containing a large number who will die if they don't receive quick medical attention. The reason why it is important to have many helicopters, but not necessarily large ones, is apparently because the casualties are spread out at any one time over the many landing zones and other facilities, and the availability of helicopters to respond to a medical evacuation request is therefore more important than the load each helicopter can carry. (This is generally true in civilian emergency medical situations also).

The gravity of large delays in transporting seriously wounded patients to treatment centers is further illustrated in Figure 7, where the percentage of mortalities among surgical patients at the combat zone hospital is plotted as a function of the ratio of surgical treaters to surgical patients at the hospital. While more research is needed in this area to determine the effect of other parameters that influence mortalities, the two curves shown in Figure 7, obtained from two simulations which differed only in that one (baseline) had 16 helicopters and the other had none, illustrate two very significant points. First, provided the delay time in transporting surgical patients to the hospital is not so great that the patients are practically dead on arrival, the mortality rate of surgical patients rises very sharply when the ratio of surgical treaters to surgical patients drops below some numerical value which is strongly affected by the delay time in reaching the hospital. Second, even with a favorable treater-to-patient ratio, a delay of approximately one hour in transporting surgical patients to the hospital may multiply the mortality rate by a factor between 5 and 10. For example, most surgical patients in the simulations under discussion are transported directly from the FEBA to the hospital, a distance of 30 miles. In the baseline simulation (lower curve of Figure 7), most of these patients go by helicopter, which makes the trip in 18 minutes. If there are no helicopters (upper curve), this trip takes 72 minutes by ambulance, or 54 minutes longer. From Figure 7 it can be seen that for a treater-to-patient ratio of .20 (1 treater for every 5 patients) the mortality rate of surgical patients rises from 2% to 10% when there are no helicopters. Even with a treater-to-patient ratio of .3 (1 treater for approximately 3 patients) the mortality rate increases from about 1% to over 6% when there are no helicopters. At treater-to-patient ratios below .20 the mortality rate among surgical patients becomes completely intolerable when there are no helicopters. These results indicate that there is clearly a need for finding feasible alternatives to helicopter medical evacuation.

Looking again at Figure 6, it is seen that the resources provided by the battalion aid stations (BAS) and clearing stations (CS) have considerable impact on the overall mortality rate and on the number of patients returned to duty. When these facilities were removed, the existing hospital resources -- treaters, ambulances and beds -- and the helicopter pool were not sufficient to cope with the increased load placed on them. As a result, more patients died at the FEBA while awaiting evacuation, and more patients died at the hospital, either in treatment or while waiting for treatment. The overall mortality rate in the combat zone rose from 4.0% (baseline) to 8.8%. Correspondingly, more patients had to

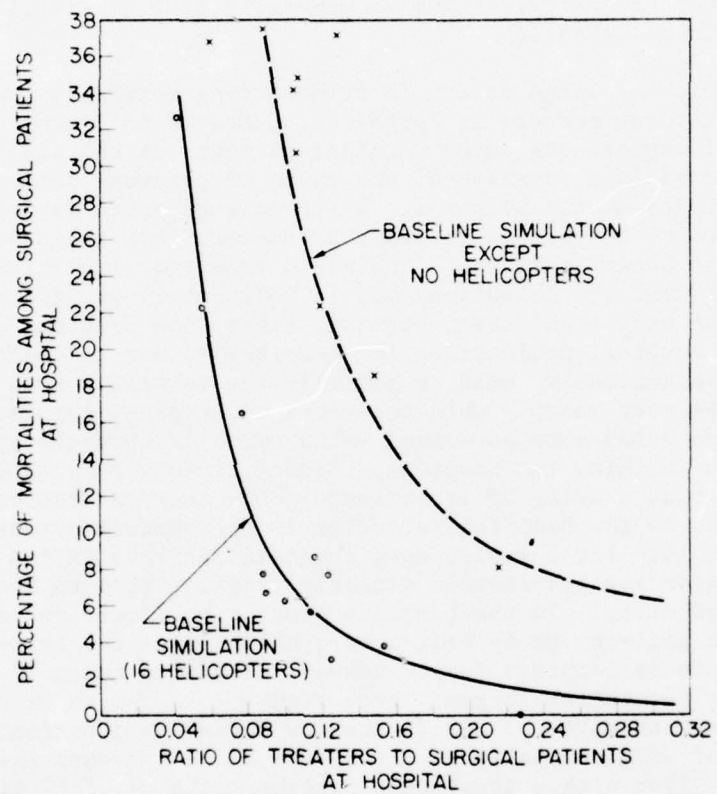


Fig. 7 — Variation of surgical patient mortalities at hospital with the number of assigned treaters

be evacuated from the hospital, and hence from the combat zone, because of the increased demand placed on the hospital's 200 convalescent beds, which were overtaxed even in the baseline simulation. With the removal of the battalion aid stations and clearing stations, the percentage of casualties evacuated from the combat zone rose from 38.5% (baseline) to 42.8%; the percentage of casualties returned to duty dropped from 57.5% (baseline) to 48.4%.

The significance of changes in medical regulating procedures, or procedures which govern the flow of patients through the evacuation system, is also shown in Figure 6.

The overall mortality rate rose from 4.0% to 5.9% simply by changing the rule governing the destination of helicopters such that when evacuating patients from a facility each helicopter went directly to the medical support facility required by the patient with highest priority, instead of going, as in the baseline simulation, to the closest facility to which any patient on board the helicopter was designated to go. This simple change in the employment of helicopters delayed the evacuation process and made the helicopters less available to respond to evacuation requests. Consequently, mortalities rose not only at the battalion aid stations and clearing stations, but primarily at the FEBA, where considerably more patients died while awaiting evacuation.

The mortality rate rose to 13.2% when the baseline simulation was modified to exclude helicopters from landing at the FEBA, while at the same time retaining all other baseline rules for the employment of evacuation vehicles. This meant that all evacuees from the FEBA (all of the inpatients) went by ambulance to the battalion aid station level, but only those designated for that level were unloaded and treated there. The rest remained in the ambulances until they reached their designated facility. As a result, ambulances were overtaxed, helicopters were under utilized, and the mortalities rose sharply, especially at the hospital because of the long trip time from the FEBA, and at the FEBA because of the long waiting time in the evacuation queues. This situation was improved considerably (mortality rate 6.4%) when all patients were unloaded from the ambulances at the BAS level and remained there for treatment until they needed a treater who was not assigned or until they had received their first-aid work unit, which meant they could be moved safely. In this case the heaviest mortalities occurred at the battalion aid stations (not enough treaters were assigned) and at the FEBA, again in the evacuation queues while waiting for ambulances to come. Treaters at the hospital were apparently idle a good deal of the time, compared to those at the battalion aid stations. Not one patient requiring major surgery died at the hospital throughout the combat period, while 178 such patients died at the battalion aid stations.

It is clear, from these two simulations in which helicopters were excluded from the FEBA, that the optimum medical regulating procedures for such a contingency will only be learned through additional research. In these simulations, the right types of treaters were assigned to the

battalion aid stations to render critical work units to most of the seriously wounded patients, but there were not enough treaters assigned. Under such circumstances, a limited number of treaters must render limited treatment to many patients, or full treatment to a limited number of patients. Further decisions must be incorporated into the NAMES II logic before these choices can be examined.

Additional simulations have demonstrated that the number of patients returned to duty is affected considerably by the convalescent bed capacity and the evacuation policies in force at each facility. The evacuation policy governs bed requirements, and both the bed requirements and the bed capacity govern bed occupancy, which is a measure of the number of casualties returned to duty. To determine convalescent bed requirements, the NAMES II Model records the number of patients who, upon receipt of all of their required work units, have convalescent times which do not exceed the evacuation policy at their facility. All of these patients will be allowed (by the evacuation policy) to recuperate at their facility and subsequently return to duty provided the bed capacity is sufficient. Consequently these patients establish the bed requirements at the facility. Clearly the convalescent bed occupancy cannot exceed either the convalescent bed capacity or the convalescent bed requirements. These last two factors are independent of each other. The upper curves of Figure 8 show that in the baseline simulation, the hospital convalescent bed requirements dictated by the 15-day evacuation policy overtake the 200 bed capacity prior to the second day of combat. The only way to increase the bed occupancy is to increase the bed capacity. Even if that cannot be done, however, a shorter evacuation policy would have the effect of returning more patients to duty, because it would result in a higher turnover rate in the convalescent ward. By contrast, the lower curves of Figure 8 show that the combined 180 bed capacity at the three clearing stations exceeds the requirements imposed by the 3-day evacuation policy. In this situation, a longer evacuation policy would make more efficient use of the bed capacity.

Several additional simulations were run to see the impact that changes in bed capacities and evacuation policies would have on bed requirements, bed occupancy and the number of casualties returned to duty. Curves showing daily bed requirements and occupancy for these simulations appear in Figures 9, 10, and 11. The most significant results, the number returned to duty following convalescence, are as follows:

COMPARISON SIMULATIONS			TOTAL NUMBER WHO ENTERED CONVALESCENCE DURING 15-DAY COMBAT PERIOD. (WILL RETURN TO DUTY)		
BASILINE SIMULATION	CS	HOSP	CS LEVEL	HOSPITAL	TOTAL
EVAC POLICY (DAYS)	3	15			
BEDS	60	200	451	569	1020 (28% of all inpatients)
SIMULATION B					
EVAC POLICY	6	15			
BEDS	60	200	662	553	1215 (35% of all inpatients)
SIMULATION C					
EVAC POLICY	6	10			
BEDS	60	200	6	641	1303 (37% of all inpatients)
SIMULATION D					
EVAC POLICY	6	15			
BEDS	60	400	662	988	1650 (47% of all inpatients)

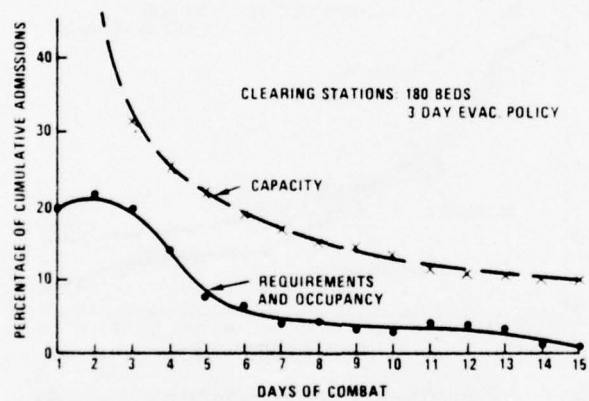
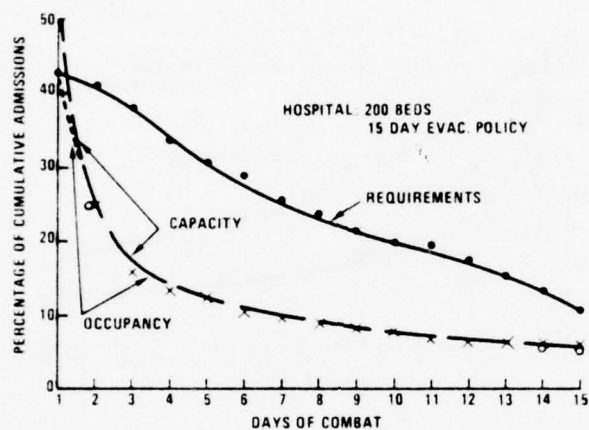


Fig. 8 — Baseline simulation convalescent bed requirements, capacity and occupancy

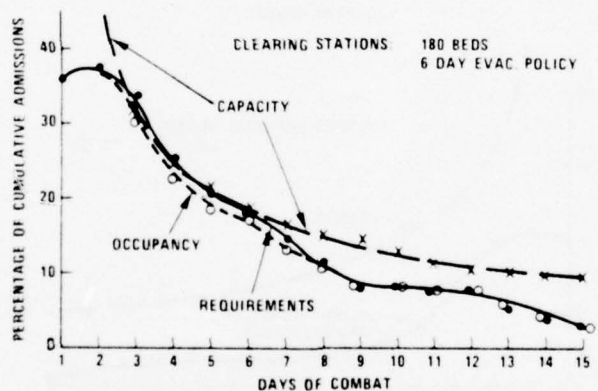
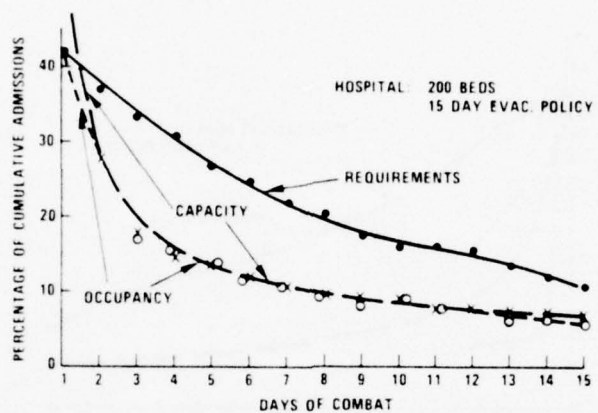


Fig. 9 — Convalescent bed requirements, capacity and occupancy, NAMES simulation B

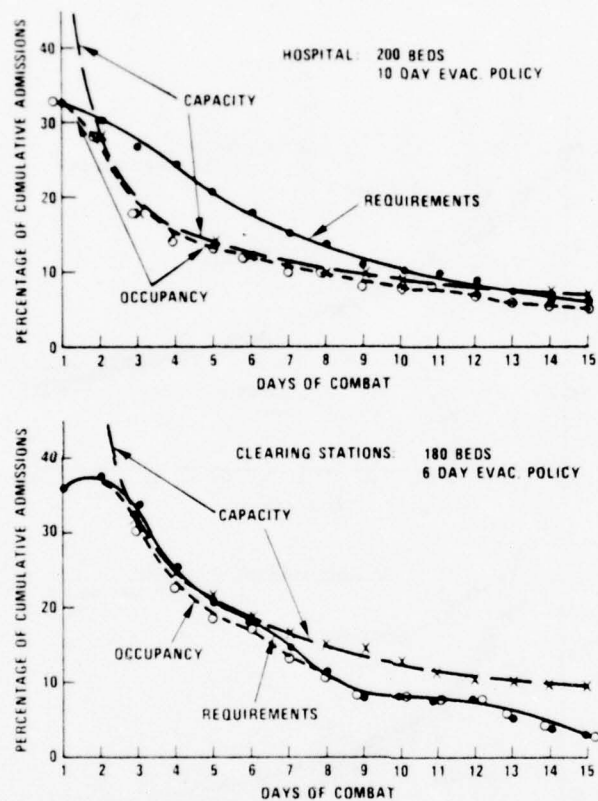


Fig. 10 — Convalescent bed requirements, capacity and occupancy, NAMES simulation C

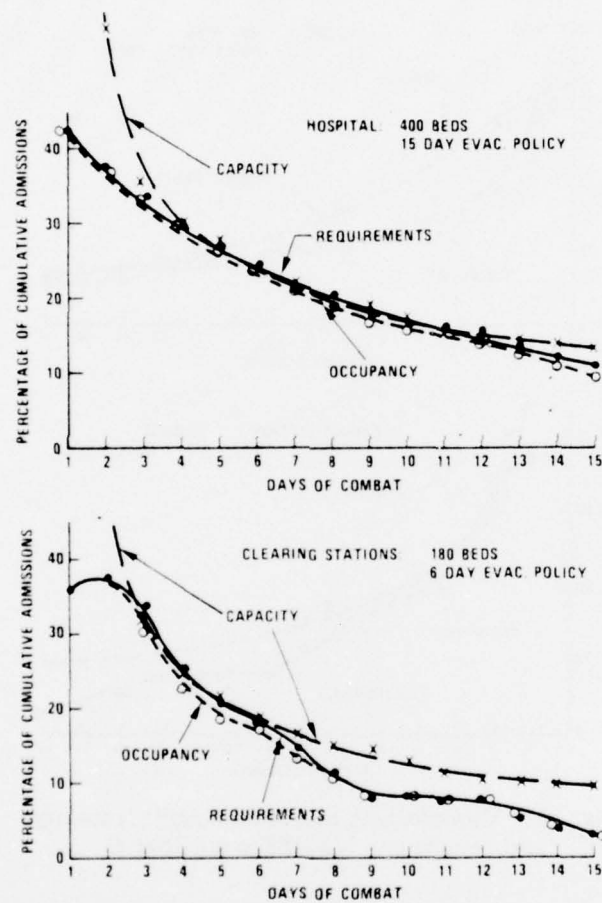


Fig. 11 — Convalescent bed requirements, capacity and occupancy, NAMES simulation D

These simulations demonstrate the effect of the evacuation policy when a facility is filled to capacity and when it is not. When the hospital is filled to capacity, as it is most of the time in all four simulations, a decrease in the evacuation policy (Simulation C), which causes a higher turnover rate, allows more patients to be admitted, with a resulting increase in the number returned to duty. Conversely, a longer evacuation policy under the same crowded conditions would result in fewer patients returning to duty. Obviously this would not be the result if the facility were not crowded, as is seen in Simulations B, C, and D, where a longer evacuation policy at the clearing stations, which are not crowded, permits more patients to enter convalescence and subsequently return to duty from those facilities.

Additional research is required to determine the most "efficient" evacuation system configurations, resources and procedures. Preliminary results suggest, for example, that a medical facility with fixed resources (beds) has an optimum evacuation policy which maximizes the number of patients returned to duty or minimizes the number evacuated (Figures 12 and 13). The effect of other parameters, such as the mortality rate, has yet to be investigated.

The NAMES Model also prints out useful information regarding patients who must be evacuated out of the combat zone. This information includes bed requirements as well as information which corresponds to patient "remaining factors" discussed in Beebe and DeBakey [4] and Army Field Manual FM 8-55. [5] Both the Army and the U.S. Marine Corps suggest that "remaining factors" be used to estimate hospital bed requirements, and have compiled historical data for this purpose. Figure 14 shows, however, that the patient remaining factors outside of the combat zone are very much related to the medical treatment facilities within the combat zone. Therefore, historical data should be used with caution.

Figure 14 shows patient remaining curves in hospitals outside the combat zone for the NAMES baseline simulation and also for NAMES Simulation D, which, as already indicated, is a much more efficient combat zone system than the baseline simulation system. In NAMES Simulation D, very few patients were evacuated from the combat zone because of bed shortages. This is indicated by the first section of the curve, which is almost horizontal for the duration of the combat zone hospital evacuation policy of 15 days.

On the other hand, the two curves of Figure 14 which were taken from Army FM 8-55 represent patient remaining factors for WIA's and DNB's in North Africa during World War II over a fairly long period of combat. Not only do these curves indicate that a great many patients entered theater level hospitals with very short convalescent times, but the curves give no indication of the particular combat zone medical facilities and evacuation procedures which were employed.

CONCLUSIONS AND RECOMMENDATIONS

The scope of this report obviously does not permit a complete discussion of the total capabilities of the NAMES Model, or of all the results

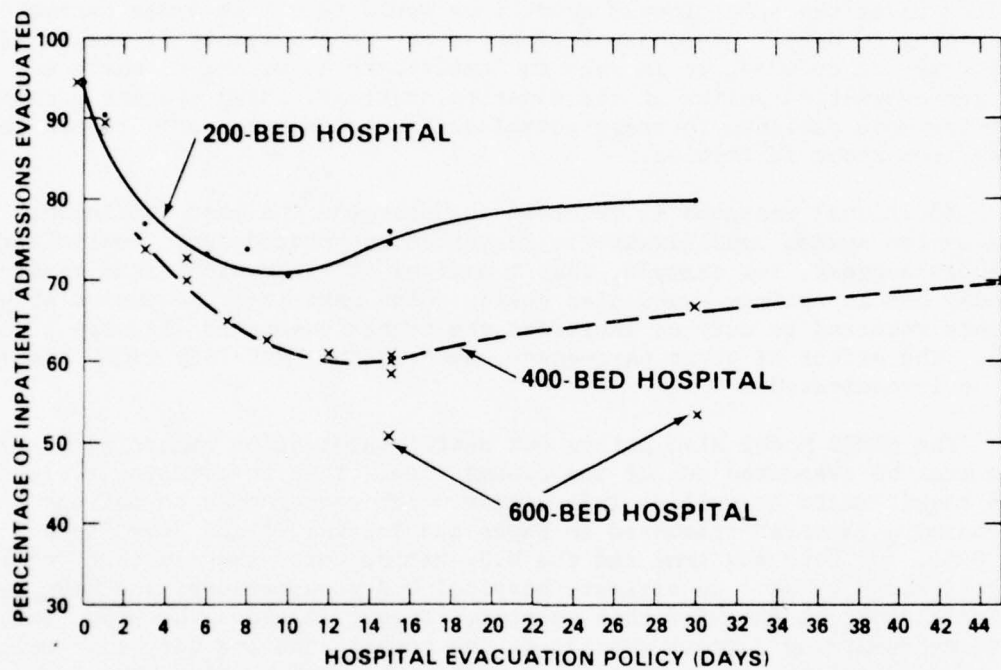


Fig. 12 — Impact of evacuation policy on hospital evacuations

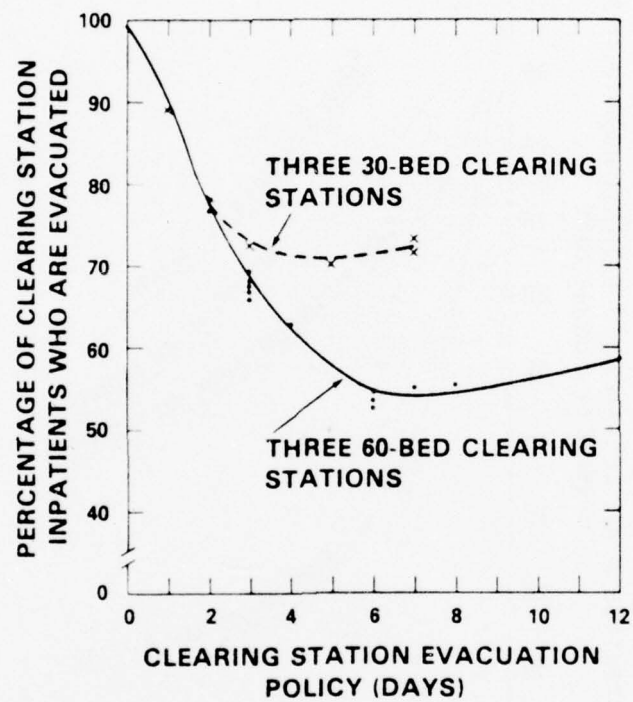


Fig. 13 — Impact of evacuation policy on clearing station evacuations

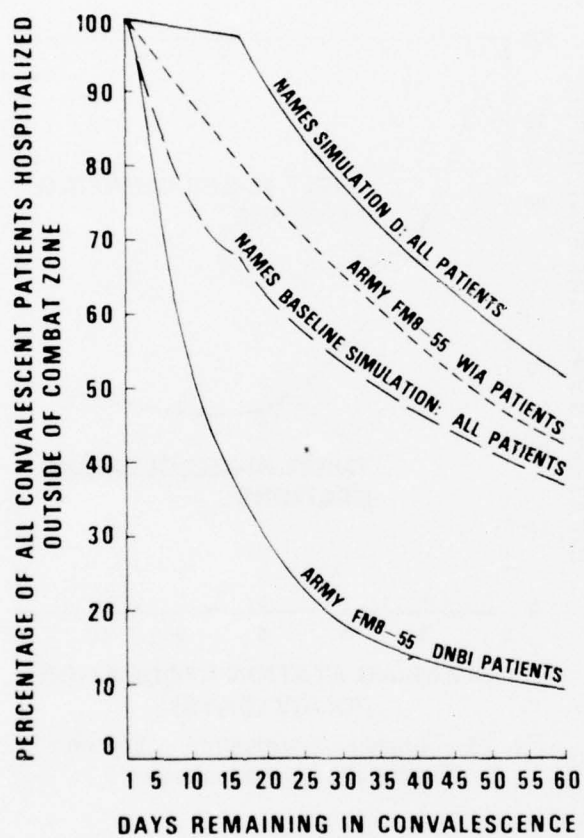


Fig. 14 — Convalescent patient remaining time in hospitals outside of combat zone

obtained from the model thus far. Further details of the operation of the model will be contained in the Program Maintenance Manual. It is hoped that the present discussion demonstrates that the model is an effective (and inexpensive) device for planning and studying combat zone medical care systems together with the requirements those systems impose on supporting medical, transportation, and logistics resources.

It is also hoped that the user of NAMES II, the analyst to whom this report is addressed, will realize that a combat zone medical evacuation system is complex and that a model that simulates such a system must also be complex. To obtain meaningful results from such a simulation model, the user must study and understand the model so that he realizes its capabilities and its limitations. NAMES II is a discrete simulation model based on logical relationships. It attempts to simulate real situations, and does not use formulas or assumptions for computing resource requirements. The model is sensitive to the patient load and patient "mix," as one would expect of a real medical evacuation system.

This report has demonstrated that patient dispositions in a combat zone depend on many factors, including resources, command control policies and medical regulating procedures. Clearly, any "models" and other contingency planning methods which ignore these factors must be used with great caution.

Studies using NAMES II have also indicated the need for additional research to better understand the relationships between patient dispositions, resource requirements, allocations and utilization, medical regulating procedures and command control or operational policies. Several recommended areas for additional research have been identified in this report. These include:

1. effects of treater availability and treatment delay times on patient dispositions and resource requirements,
2. medical regulating procedures and their effect on patient dispositions and resource requirements,
3. combat zone evacuation policies and their effect on patient dispositions and resource requirements.

REFERENCES

1. Richards, Paul B., "Simulating Medical Treatment and Evacuation of Combat Casualties," proceedings of NATO-sponsored conference on Systems Science in Health Care, July 5-9, 1976, Paris, France.
2. Computer Sciences Corp., Falls Church, Va. "U. S. Army Medical Planning Factors Study (MEDPLN), Final Report, Vol. 111," 30 September 1973.
3. McEliece, J. H., Capt., U.S. Army, "U. S. Army Medical Planning Factors Study (MEDPLN), Final Report, Vol. 11, Appendix G, The Patient Workload Model," April 1975, U.S. Army Logistics Center, Ft. Lee, Va. 23801
4. Beebe, G. W. and DeBakey, M. E., Battle Casualties, Charles C. Thomas, Publisher, Springfield, Illinois, 1952.
5. Department of the Army Field Manual FM 8-55, Army Medical Service Planning Guide, October, 1960.

APPENDIX A

INPUT PARAMETERS FOR NAMES II

BASELINE SIMULATION

TABLE A-1
 MEAN NUMBER OF BATTLE CASUALTIES (INPATIENTS)
 IN THE BASELINE SIMULATION

<u>Day</u>	<u>Battle Casualties</u>
1	241
2	680
3	512
4	222
5	158
6	321
7	217
8	222
9	92
10	255
11	348
12	168
13	60
14	65
15	<u>54</u>
	3,615 TOTAL

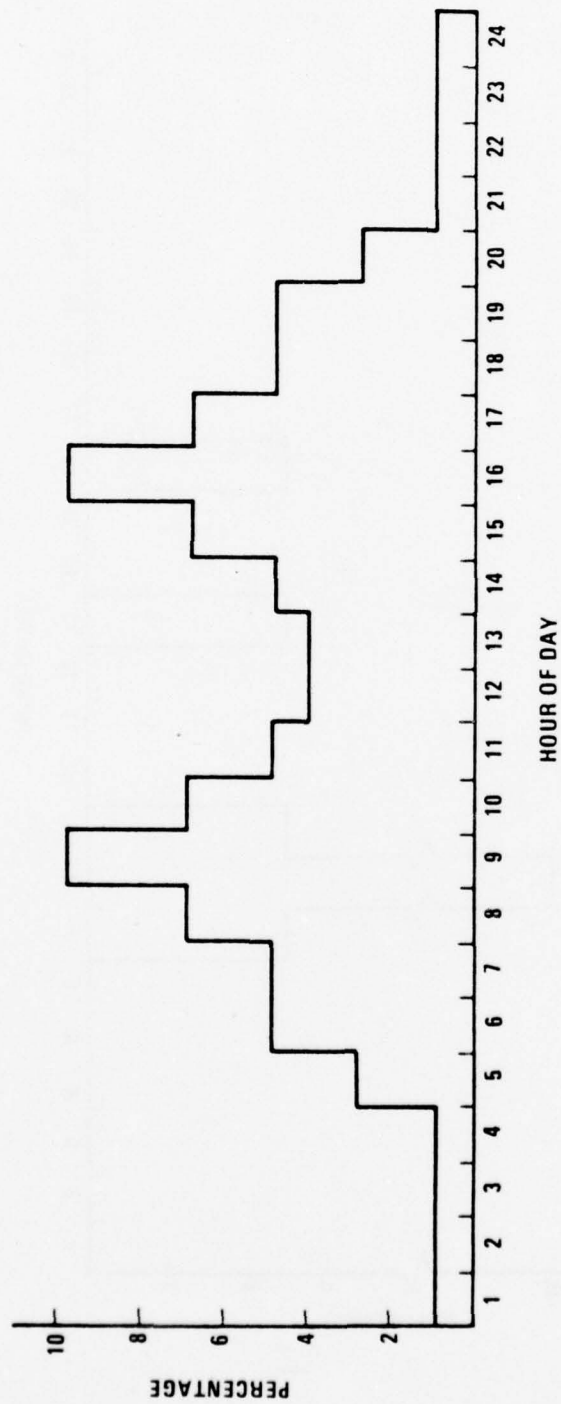


Fig. A-1 — Percentage distribution of battle casualty arrivals by hour of day

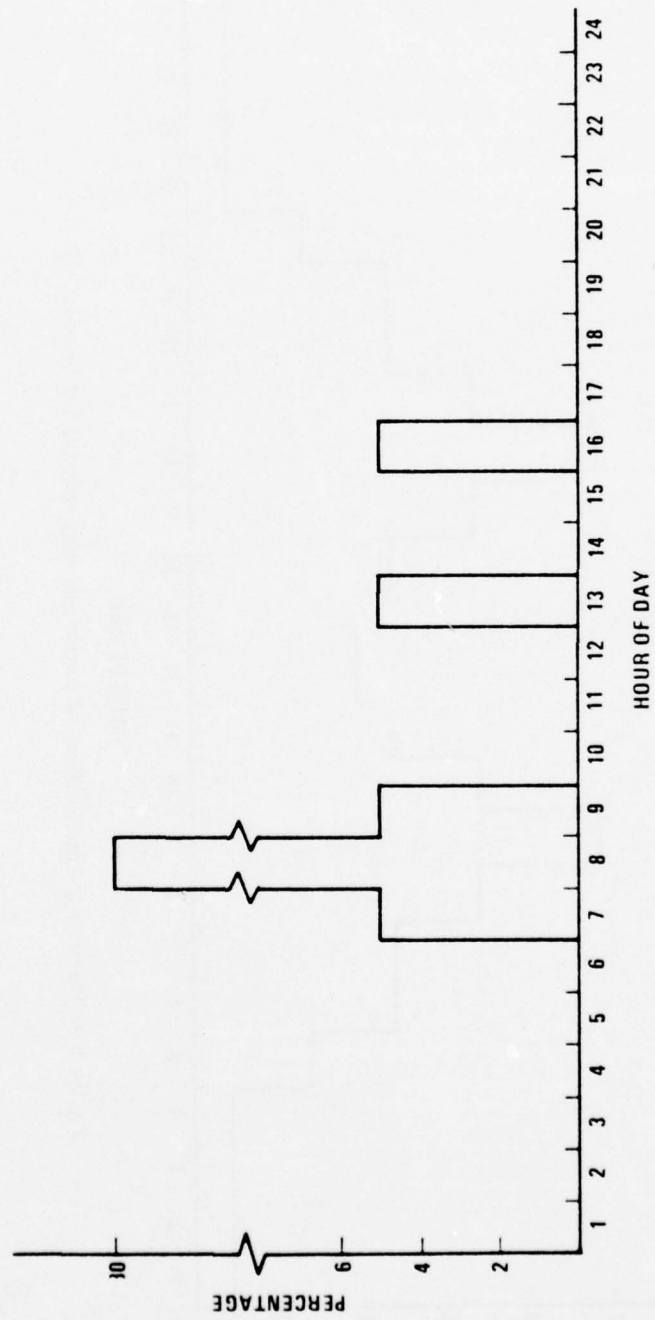


Fig. A-2 — Percentage distribution of outpatient arrivals by hour of day

TABLE A-2
PROPORTIONAL DISTRIBUTIONS OF CASUALTIES
AMONG PATIENT CLASSES

Patient Class *	Percent in Class	
	<u>Inpatients</u>	<u>Outpatients</u>
1	.15	
2	.02	
3	1.24	
4	.42	
5	.23	
6	.90	
7	.37	
8	.37	
9	.00	
10	.49	
11	1.15	
12	1.48	
13	3.46	
14	.16	
15	.64	
16	.21	
17	.49	
18	.27	1.80
19	.41	
20	1.07	1.00
21	.16	
22	.38	
23	.38	
24	1.42	
25	2.50	
26	10.01	
27	.48	
28	.48	
29	.53	
30	1.23	

*See Table A-4 for Patient Class Descriptions.

TABLE A-2 (continued)

Patient Class	Percent in Class	
	<u>Inpatients</u>	<u>Outpatients</u>
31	5.34	
32	5.34	
33	3.98	
34	.03	
35	1.76	
36	5.78	
37	.64	
38	1.18	
39	3.62	
40	.19	
41	.69	
42	.57	
43	1.10	
44	.01	
45	1.38	.10
46	2.73	27.30
47	.47	.70
48	2.24	.70
49	1.42	
50	.26	12.00
51	.04	
52	.31	2.40
53	4.08	7.40
54	.32	1.70
55	.93	.40
56	1.47	6.30
57	.84	14.20
58	.15	5.10
59	.41	1.10
60	.26	
61	2.89	4.80
62	.30	
63	3.66	1.10

TABLE A-2 (continued)

<u>Patient Class</u>	<u>Percent in Class</u>	
	<u>Inpatients</u>	<u>Outpatients</u>
64	.18	
65	.25	
66	1.35	
67	.00	1.50
68	3.06	5.40
69	.58	
70	3.13	
71	.07	.60
72	1.74	.60
73	.26	
74	3.01	3.80
75	.88	

TABLE A-3
TREATER DESCRIPTIONS AND ASSIGNMENTS

NAMES Code	* MOS	Description	BAS	CS	HOSP
1	2100	General Surgeon		1	1
	2100	Orthopedic Surgeon		1	1
2	2900	Ward Nurse (Medical/Surgical)		2	19
3	2100	Medical General Practitioner	2	2	6
4	8404	Hospital Apprentice			26
5	8404	Hospitalman	15		2
	8404	Surgical Ward Corpsman		12	25
6	8483 8404	Hospital Corpsman	6	10	16
7	8483 8404	Operating Room Technician		4	3
8		NA			
9	2100	Dental Team			1
10	2100	Psychiatrist			1
11	2300	Clinical Psychiatrist			1
12		NA			
13	8412	Laboratory Technician		2	3
14	2300	Optometry Team			1
15	8404	Litter Team (4 each)	1	4	6
16	8452	X-Ray Technician		2	3
17	2100	Internist			1
18	2900	OR Nurse		4	11
19	2900	Neuropsych Nurse			3
20	2300	Medical Technologist			1

*MOS - Military Occupation Specialty (U.S. Navy)

TABLE A-4
PATIENT CLASS DESCRIPTIONS

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
1	Head: Fracture, Comp. Com.
2	Head: Fracture, Simple
3	Head: Wound, P&P
4	Head: Wound, Incised
5	Head: Concussion, Severe
6	Head: Concussion, Mild
7	Face: Fracture, Comp. Com., Severe
8	Face: Fracture, Comp. Com., Mild
9	Face: Fracture, Simple
10	Face: Wound, P&P, Severe
11	Face: Wound, P&P, Mild
12	Face: Wound, Incised, Lac, Severe
13	Face: Wound, Incised, Lac, Mild
14	Eye (and Orbit): Other Trauma, Severe
15	Eye (and Orbit): Other Trauma, Mild
16	Neck: Wound, Incised and Lac, Severe
17	Neck: Wound, Incised and Lac, Mild
18	Eye: Inflammatory Diseases
19	Eye: Other Eye Diseases (Refractions & Tests)
20	Ear: Inflammation
21	Dental Diseases and Conditions

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
22	Upper Extremities, Fracture, Comp. Com., Severe, to Include: Crushing and/or Compression Injuries and/or Partial or Traumatic Amputations
23	Upper Extremities, Fracture, Comp. Com., Mild, to Include: Crushing and/or Compression Injuries and/or Partial or Traumatic Amputations
24	Upper Extremities: Fracture, Simple
25	Upper Extremities, Wound, P&P Incised, Severe
26	Upper Extremities, Wound, P&P Incised, Mild
27	Lower Extremities, Fracture, Comp. Com., Severe to Include: Pelvic Fractures and Fractures of the Hip; Crushing and/or Compression Injuries; Partial or Traumatic Amputations
28	Lower Extremities, Fracture, Comp. Com, Mild to Include: Pelvic Fractures and Fractures of the Hip; Crushing and/or Compression Injuries; Partial or Traumatic Amputations
29	Lower Extremities, Fracture, Simple, Severe, to Include: Fracture in Front of Pelvis
30	Lower Extremities, Fracture, Simple, Mild, to Include: Fracture in Front of Pelvis
31	Lower Extremities, Wound, P&P, Lac, Severe
32	Lower Extremities, Wound, P&P, Lac, Mild
33	Other Musculoskeletal (Requiring Surgery), Compression Fractures (Vertebra), Angulation Fractures (Vertebra) (without cord involvement)
34	Osteomyelitis
35	Diseases of Bones and Joints to Include: Arthritis, Rheumatoid Arthritis, Osteoarthritis, Bone Tumors (no surgery required)
36	Thorax: Wound, P&P, Severe
37	Thorax: Wound, P&P, Mild

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
38	Thorax: Wound, P&P, Heart and Trachea, Severe
39	Abdominal, Wound, P&P, Severe
40	Abdominal, Wound, P&P, Mild
41	Neoplastic Diseases: Pilonidal Cysts and Sinuses (surgery required)
42	Varicose Veins (Hemorrhoids)
43	Emergency Surgical Conditions (Nontraumatic) to Include: Appendicitis, Hernia, Gall Bladders
44	Ulcer (Bleeding or Obstructing)
45	Burns: 1° - 2° - 3°
46	Lacerations and Contusions to Include: Lacerations, NEC; Contusions, Abrasions, Hematomas; Foreign Bodies, and Puncture Wounds, Mild, Not Elsewhere Covered
47	Wounds/Injuries of Genito-Urinary System
48	Diseases of the Urinary System to Include: Renal Calculus, Hematuria
49	Neurosurgical Conditions (Nontraumatic) to Include: Brain Tumors; Brain Abscesses; Increased Intracranial Pressure; Aneurysms of Blood Vessels of Brain, and Hyperthermia
50	Spinal Injuries to Include: Cord Compression, Herniated Intervertebral Disk, and Tumors, and Cord Involvement
51	Tuberculosis and body areas affected by Tubercule Bacilli
52	Allergies to Include: Allergic Reactions; Urticaria (Hives); Angioneurotic Edema, and Allergic Rhinitis (Hay Fever)
53	Diseases of Skin and Cellular Tissue to Include: Eczema; Psoriasis; Impetigo Contagiosa; Verrucae (Warts); Scabies Herpes (Simple/Zoster); Furuncle, Carbuncle; Furunculosis; Dermatophytosis, and Dermatitis
54	Venereal Diseases

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
55	Cardiac Conditions to Include: Arrhythmias; Congestive Heart Failure; Bacterial Endocarditis; Pericarditis; Acute Pulmonary Edema; Coronary Heart Disease (Myocardial Infarct and Angina Pectoris); Rheumatic Heart Disease; Rheumatic Fever, and Hypertension
56	Acute Respiratory Infections to Include: Pneumonia; Pleurisy; Influenza; Bronchitis, Acute/Chronic
57	Disease of Nose and Throat to Include: Laryngitis; Pharyngitis; Nasopharyngitis; Tonsillitis; Peritonsillar Abscess; Strep Throat
58	Diseases of the Sinuses and Nose to Include: Sinusitis, Acute; Sinusitis, Chronic; Deviated Septum; Polyps, and Epistaxis
59	Other Pulmonary Disorders to Include: Emphysema; Bronchiectasis; Empyema; Lung Abscess, and Bronchial Asthma
60	Metabolic and Nutritional Diseases
61	Intestinal Diseases and Conditions to Include: Gastritis, Gastroenteritis, and Enteritis
62	Peptic Ulcer
63	FUO
64	Blood Dyscresias
65	Poisoning: Food, Drug, Alcohol (Acute), and Gas
66	Exposure to Extreme Temperatures to Include: Heatstroke, Heat Exhaustion, Heat Cramps, and Frost Bite
67	Insect and Reptile Bites
68	All Other Diagnoses and Conditions
69	Contagious Viral Diseases: Hepatitis; Infectious Mononucleosis; Meningitis, Aseptic and Meningitis, and Meningococcal
70	Malaria

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
71	All Other Viral Diseases to Include: Poliomyelitis, Smallpox, Yellow Fever, Rabies, Psittasosis, Trachoma, Measles, Chicken Pox, and Rubella, Mumps, Whooping Cough
72	All Bacterial Diseases to Include: Hansen's Disease, Typhoid, Cholera, Plague, Brucellosis, Bacillary Dysentery, and Tetanus; Protozoan Infections (Ambeic Dysentery), and Rickettsial Infection (Typhus)
73	Psychosis
74	Psychiatric Conditions Except Psychosis to Include: Anxiety Reactions; Situational Maladjustment, Character Disorders; and Drug Abuse
75	Neurological Problems to Include: Paraplegia, Quadraplegia, Epilepsy, Migraine, Hemiplegia, Encephalitis, Headache, Multiple Sclerosis, Myasthenia Gravia, and Parkinson's Disease

TABLE A-5
TREATMENT PARAMETERS FOR EACH PATIENT CLASS

PATIENT CLASS ¹	PRIORITY ²	L OR A ³	WORK UNITS ⁴
1	1	L	6, 17, 9, 15, 33, 14, 41, 42, 11, 13, 5, 6
2	1	50%L	6, 33, 9, 42, 11, 5
3	1	L	6, 9, 15, 33, 14, 41, 42, 13, 11, 5, 6
4	2	L	6, 12, 33, 29, 11, 9, 5, 6
5	2	L	6, 33, 43, 5, 6
6	3	L	6, 33, 43, 5, 6
7	1	L	6, 9, 15, 12, 33, 41, 42, 13, 11, 5, 6
8	1	L	6, 17, 33, 41, 42, 13, 11, 9, 5, 6
9	3	A	33, 9, 10, 5
10	1	L	6, 15, 12, 33, 41, 42, 43, 13, 13, 11, 5, 6
11	2	A	17, 33, 41, 11, 5
12	2	L	6, 9, 12, 33, 41, 42, 11, 13, 5, 6
13	3	A	9, 33, 29, 11, 13, 5
14	1	L	6, 9, 35, 11, 38, 5, 6
15	2	A	9, 35, 11, 38, 5
16	2	L	6, 17, 9, 15, 41, 42, 11, 13, 5, 6
17	3	A	9, 29, 11, 11, 5
18	3	A	8, 35, 38, 5
19	3	A	35, 5
20	3	A	8, 5
21	3	A	7, 40, 5
22	2	L	6, 33, 9, 12, 41, 43, 11, 10, 13, 5, 6
23	3	L	6, 33, 9, 12, 41, 43, 11, 10, 13, 5, 6
24	3	A	33, 9, 11, 10, 8, 5
25	2	50%L	6, 33, 9, 41, 43, 11, 10, 13, 5

1 See Table A-4 for Patient Class Descriptions.

2 1 = Urgent, 2 = Immediate, 3 = Routine.

3 L = litter, A = ambulatory.

4 See Table A-6 for Work Unit Descriptions.

TABLE A-5 (Cont.)

TREATMENT PARAMETERS FOR EACH PATIENT CLASS

PATIENT CLASS ¹	PRIORITY ²	L OR A ³	WORK UNITS ⁴
26	3	A	33, 9, 29, 11, 8, 5
27	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
28	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
29	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
30	2	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 22, 13, 38, 5, 6
31	1	L	6, 33, 9, 12, 41, 43, 11, 13, 5, 6
32	3	A	33, 9, 29, 11, 13, 5
33	2	L	6, 33, 9, 27, 28, 41, 10, 13, 9, 5, 6
34	3	A	33, 44, 45, 8, 38, 5
35	3	A	33, 44, 45, 8, 38, 5
36	1	L	6, 17, 16, 41, 43, 11, 30, 13, 33, 31, 9, 5, 6
37	1	L	6, 17, 41, 43, 11, 30, 33, 9, 5, 6
38	1	L	6, 17, 15, 14, 41, 33, 42, 11, 30, 13, 9, 5, 6
39	1	L	6, 41, 30, 33, 28, 44, 43, 11, 13, 9, 6
40	1	L	6, 41, 33, 30, 44, 11, 13, 9, 6
41	3	A	19, 11, 8, 5
42	3	A	19, 8, 5
43	1	50%L	6, 41, 44, 43, 11, 13, 9, 5
44	1	L	6, 33, 41, 13, 30, 9, 5
45	2	L	6, 14, 41, 30, 31, 11, 13, 9, 5, 6
46	3	A	33, 29, 18, 11, 9, 5
47	1	L	6, 33, 41, 31, 11, 13, 30, 5
48	3	A	33, 31, 9, 5
49	1	L	6, 33, 41, 9, 5
50	1	L	6, 33, 41, 10, 9, 8, 38, 5

TABLE A-5 (Cont.)

TREATMENT PARAMETERS FOR EACH PATIENT CLASS

<u>PATIENT CLASS</u> ¹	<u>PRIORITY</u> ²	<u>L OR A</u> ³	<u>WORK UNITS</u> ⁴
51	3	A	33, 31, 8, 38, 5
52	3	A	31, 9, 8, 38, 5
53	3	A	11, 9, 8, 38, 5
54	3	A	2, 31, 9, 8, 5
55	1	L	6, 34, 33, 43, 9, 8, 38, 5
56	1	A	33, 31, 9, 8, 5
57	3	A	2, 33, 31, 9, 8, 5
58	3	A	2, 31, 8, 5
59	3	A	2, 33, 31, 9, 8, 5
60	3	A	33, 31, 8, 38, 5
61	3	A	31, 8, 5
62	3	A	33, 31, 8, 38, 5
63	3	A	31, 8, 5
64	3	A	31, 8, 5
65	1	75%L	6, 17, 31, 43, 45, 8, 5
66	1	75%L	6, 20, 13, 31, 8, 5
67	3	A	23, 9, 8, 5
68	3	A	2, 33, 11, 31, 9, 8, 38, 5
69	1	80%L	6, 33, 31, 32, 9, 8, 38, 5
70	2	A	31, 32, 9, 8, 38, 5
71	1	A	33, 31, 45, 9, 8, 5
72	1	50%L	6, 13, 31, 45, 9, 38, 5
73	2	75%L	6, 1, 9, 8, 36, 5
74	2	50%L	6, 1, 9, 8, 36, 5
75	1	50%L	6, 31, 45, 8, 4, 38, 43, 5

TABLE A-6

WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
1	Psychotherapy	Psychological first aid
2	Sick Call	Routine DX/TX, e.g., URI, sore throats, etc.
3	Sorting (Triage)	Arranging for patient evacuation to facility best suited for illness or injury.
4	Resuscitative Nursing Care	Initial care given.
5	Administration	Clinical records prepared by professional staff.
6	Litter Hauling	Performed in and around facility.
7	Dental Screen	Preliminary dental examinations based upon a painful condition.
8	Issue Medication	Dispensing non-inject-type medications.
9	Give Injections	Administration of injectible medications.
10	Splints	Immobilize the affected site.
11	Dressings	Protect wound.
12	Clamp Ligate	To obtain effective hemostasis.
13	IV Fluids	Use of plasmanate, ringers, Lactage, etc.
14	Cut Down	Surgical insert of an intra-cath.
15	Surgical Airway (Allowable delay time - 30 minutes)	Surgical procedures to open an airway and/or endotracheal tube insertion.
16	Seal Sucking Chest Wound. (15 minutes)	
17	Resp. Resuscitation (5 minutes)	Perform mouth-to-mouth resuscitation. Mechanical resuscitation (pulmotor) where equipment is available.
18	RX Minor Abrasions	Wash, clean, dress minor contusions/abrasions
19	I&D Abscess	Surgical drain minor abscess.
20	Environment Stress Treatment	Treat heat and cold injuries.

TABLE A-6 (Cont.)

WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
21	Follow-up Nursing Care	Continuing Care.
22	Cast Fx	Immobilize closed Fx or minor bones
23	Antidote for Insect & Reptile bites	Antidote for insect and reptile bites.
24	Thorocentesis	Withdrawal of air/blood.
25	Insert Chest Tube and Intercostal N Block	Use of local anesthetic to reduce pain from insertion of chest tube.
26	N/A	
27	Insert Foley Cath.	Insert Foley Cath. in GU injuries.
28	Insert N/G Tube	Inserted to reduce abdominal gases.
29	Debridement	Surgical cleansing of minor wounds.
30	Administer Blood	Capability of administering type O low titer
31	Lab Exams	Simple lab studies, e.g., urine, Hb, WBC.
32	Dx Malaria	With lab can perform malaria screen of Dx.
33	Xray (per film)	Diagnostic chest and bone xrays.
34	EKG	Can perform emergency electrocardiograms
35	Eye care	Eye care including eye surgery, nursing care, etc.
36	Psychiatric Care	Emergency psychiatric care.
37	Ward Rounds	Daily rounds on ward patients.
38	Consultation	Referral cases.
39	N/A	
40	Dental Care	Expedient dental care.

TABLE A-6 (Cont.)

WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
41		Major debridement or major surgery at the hospital.
42		Treatment of head, face and throat injuries requiring specially trained nurse.
43		Treatment requiring Operating Room Nurse or specially trained Hospital Corpsman.
44		Treatment requiring Internist.
45		Extensive Lab Exams.

TABLE A-7

PREFERRED TREATER CODES FOR EACH WORK UNIT AND ASSOCIATED TIMES

WORK UNIT ¹	PREFERRED TREATER		1ST ALTERNATE		2ND ALTERNATE		3RD ALTERNATE	
	CODE ²	E ³	CODE ²	E ³	CODE ²	E ³	CODE ²	E ³
1	7	45	4	45	6	45	5	45
2	3	5	2	5	4	5	6	5
3	1	4	3	4	4	5	6	5
4	3	30	4	30	2	30	6	30
5	3	3	4	3	6	3	5	3
6	15	3						
7	9	5	3	8	4	9		
8	5	2	6	2				
9	5	1	6	1	4	1		
10	5	15	6	15	4	15		
11	6	10	5	10	4	10		
12	3	10	4	10	6	10	1	10
13	3	6	4	6	6	6		
14	6	15	3	15	4	15		
15	6	3	1	3	3	3	4	3
16	5	15	6	15	4	15		
17	4	3	5	3				
18	5	9	6	9				
19	3	7	4	7	6	7		
20	6	45	5	45				
21	5	25	6	25				
22	7	25	5	25				
23	5	10	6	10	4	10		
24	1	15	3	15	2	15		
25	1	15	3	15	6	15		
26								
27	1	9	6	9	5	9		
28	2	9	3	9	6	9		
29	1	35	3	35	6	35		
30	2	8	1	8	4	8	6	8
31	13	5	5	5	6	5		
32	2	30	4	30	13	30		
33	16	8	6	8				
34	5	12	6	12				
35	14	20						

¹ See Table A-6 for work unit descriptions.
² See Table A-3 for treater code descriptions.
³ Expected treatment time in minutes.

TABLE A-7 (Cont.)

PREFERRED TREATER CODES FOR EACH WORK UNIT AND ASSOCIATED TIMES

WORK UNIT ¹	PREFERRED TREATER		1ST ALTERNATE		2ND ALTERNATE		3RD ALTERNATE	
	CODE ²	E ³	CODE ²	E ³	CODE ²	E ³	CODE ²	E ³
36	10	30	11	30	7	30		
37	3	2	4	2	2	2	1	2
38	2	12	1	12				
39								
40	9	60						
41	1	35	2	70				
42	19	25						
43	18	25	6	50				
44	17	45	3	45				
45	20	15	13	30				

TABLE A-8

CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (MINUTES)	CRITICAL MORTALITY WORK UNIT ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	CRITICAL CONVALESCENT WORK UNIT ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
1	5	41	180	41	1
2		42	360	42	3
3	30	41	180	41	1
4		29	720	29	6
5		43	180	43	1
6		43	1440	43	12
7	30	41	180	41	1
8	5	41	360	41	3
9		10	1440	10	12
10	30	41	180	41	1
11	5	41	360	41	3
12		41	180	41	1
13		29	720	29	6
14		35	720	35	6
15		35	720	35	6
16	5	41	120	41	1
17		29	720	29	6
18		35	1440	35	12
19		99		35	12
20		99		8	12
21		99		40	36
22		41	180	41	1
23		41	180	41	1
24		99		10	72
25		41	360	41	3

1 See Table A-4 for Patient Class Descriptions

2 See Table A-6 for Work Unit Descriptions.

TABLE A-8 (Cont.)
CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (MINUTES)	CRITICAL MORTALITY WORK UNIT ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	CRITICAL CONVALESCENT WORK UNIT ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
26		29	720	29	6
27		41	180	41	1
28		41	180	41	1
29		41	240	41	2
30		41	480	41	4
31		41	360	41	3
32		29	720	29	6
33		41	240	41	2
34		99		8	72
35		99		8	72
36	5	41	180	41	1
37	5	41	360	41	3
38	5	41	180	41	1
39		41	180	41	1
40		41	360	41	3
41		19	1440	19	12
42		19	1440	19	12
43		41	360	41	3
44		41	1440	41	12
45		41	1440	41	12
46		99		29	6
47		41	360	41	3
48		99		9	24
49		41	1440	41	12
50		41	360	41	4

TABLE A-8 (Cont.)

CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (HOURS)	CRITICAL MORTALITY WORK UNIT ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	CRITICAL CONVALESCENT WORK UNIT ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
51		99		8	12
52		99		9	12
53		99		9	12
54		99		9	24
55		43	240	43	2
56		9	720	9	6
57		8	1440	8	12
58		99		8	72
59		99		8	72
60		99		8	72
61		99		8	24
62		99		8	24
63		99		8	24
64		99		8	24
65	5	43	180	43	2
66		20	180	20	1
67	5	99		9	12
68		99		99	
69		9	240	9	2
70		9	360	9	3
71		9	240	9	2
72		9	240	9	2
73		36	360	36	3
74		36	480	36	4
75		4	360	4	3

TABLE A-9
SECOND FACILITY LEVEL (SECFAC)
FOLLOWING EVACUATION FROM
ENTRY FACILITY

Patient Class ¹	SECFAC Level ²		Patient Class ¹	SECFAC Level ²		Patient Class ¹	SECFAC Level ²
1	4		26	2		51	3
2	4		27	4		52	3
3	4		28	4		53	3
4	2		29	4		54	2
5	2		30	3		55	4
6	2		31	4		56	4
7	4		32	2		57	2
8	4		33	4		58	2
9	2		34	3		59	2
10	4		35	4		60	3
11	2		36	4		61	2
12	4		37	4		62	3
13	2		38	4		63	2
14	4		39	4		64	2
15	4		40	4		65	4
16	4		41	2		66	4
17	2		42	2		67	2
18	4		43	4		68	3
19	4		44	4		69	4
20	2		45	2		70	3
21	4		46	2		71	4
22	4		47	4		72	4
23	4		48	2		73	3
24	2		49	4		74	3
25	4		50	4		75	4

1 - See Table A-4 for Patient Class Descriptions.

2 - SECFAC Level 2 = BAS, 3 = CS, 4 = Hospital.

APPENDIX B

INSTRUCTIONS FOR PREPARATION
OF NAMES II INPUTS

The inputs required to successfully operate the NAMES II Model consist of the following:

- The patient class data describing the attributes and treatment characteristics of each patient class.
- The work unit data describing for each work unit the preferred and alternate treaters and the associated treatment times.
- The patient type data describing for each type of patient (inpatients and outpatients) the proportional distribution of patients entering the evacuation chain at each facility level and the proportional distribution of casualties among the patient classes.
- The patient priority data describing for each patient priority the associated stabilization time prior to evacuation, the evacuation queue threshold time and the additional treatment threshold time.
- The rate of arrival data specifying for each patient type (inpatients and outpatients) the average daily arrivals during the combat period as well as the proportional distribution of the arrivals for each hour of the day.
- The configuration data which describes the structure of the evacuation system, including the resources allocated to each facility and the rules for the employment of evacuation vehicles.

The NAMES II Model reads all the above inputs in free form fashion (i.e., no specific card column has to be used to present an input datum to the model); rather, the input is treated as a stream consisting of fields. Fields are, of necessity, order-dependent and must be separated from each other by at least one blank. Depending on the requirements of the model, fields may contain either alphanumeric data, integer data or real data. An alphanumeric field can contain any character; an integer field represents a number and therefore can only contain the digits 0 through 9; a real field represents a decimal number and therefore contains a decimal point in addition to the digits 0 through 9.

Each group of data, such as the patient class data or the rate of arrival data is headed by an alphanumeric keyword identifying the data that follows it. For instance, the patient class data starts with the keyword CLASS and the rate of arrival data is headed by the keyword RATES.

The following describes each required data group in detail.

PATIENT CLASS DATA GROUP

The patient class data group must contain the following two descriptive fields before the data for each patient class:

- o First Field: The word CLASS.
- o Second Field: The total number of patient classes (integer).

The data describing each patient class follows and must be prepared for each class in ascending order. It consists of the following information to be repeated for each patient class:

- Field 1. Patient class number.
- Field 2. Priority associated with the patient class. An integer number between 1 and 4.
- Field 3. Mobility factor associated with the class. This is the probability that the patient will be ambulatory and is a real number between 0.0 and 1.0. A mobility factor of 0.0 indicates that a patient within this class will be a litter patient, whereas a mobility factor of 1.0 indicates an ambulatory patient. Any number between 0.0 and 1.0 can be specified.
- Field 4. Mortality threshold time at the entry facility, specified in minutes. Treatment must begin before this amount of time elapses, otherwise the patient will die. It must be an integer number. A value of 0 in the field indicates that it is not applicable for this patient class.
- Field 5. Critical mortality work unit allowable delay time, in minutes. This represents the amount of time within which a patient of this class must complete his critical mortality work unit, otherwise he will die. It must be an integer number.
- Field 6. Critical convalescent work unit allowable delay time, in hours. This represents the amount of time within which a patient of this class must complete his critical convalescent work unit to avoid an increase in his convalescent time.
- Field 7. Second facility (SECFAC) level to which a patient of this class should be evacuated following his entry in the system. Facility levels are numbered from 1 to n starting at the Forward Edge of the Battle Area (FEBA).
- Field 8. The alphanumeric keyword WU marking the beginning of the list of work units associated with this patient class.
- Field 9. An integer number indicating the total number of work units to be performed (nwu) for this class.
- Field 10. These fields represent the list of the treatment work units which to nwu must be performed on the patients of this class. Each work unit in the list is described by the following elements:
 - o The work unit number which must be an integer number in the range of 1 to the maximum number of work units as specified in the work unit data group.

- o Following the work unit number, the user can specify whether that work unit is a first aid work unit, a critical mortality work unit, or a critical convalescent work unit.
 - The first aid work unit is identified by the letter F following the work unit number.
 - The critical mortality work unit is identified by the letter M.
 - The critical convalescent work unit is identified by the letter C.

When present, each of these letters constitutes a field, and must therefore be separated from other fields by blanks.

Any work unit can be described as first aid, critical to mortality or critical to convalescence. If the same work unit has more than one of the properties described above, it must be followed by the corresponding descriptive letters. These descriptive letters can appear in any order. If a given patient class does not have a first aid work unit, a critical convalescent work unit or a critical mortality work unit, the corresponding descriptive letters must be omitted.

Remaining Fields	The remaining data fields for a patient class contain the <u>convalescent time probability distribution</u> . This probability distribution consists of an arbitrarily long sequence of pairs of numbers. The first number in the pair represents the probability, and must be a real number; the second number represents the number of days of convalescence associated with that probability and must be an integer number. This probability distribution can be input in terms of individual probabilities or in terms of cumulative probabilities. If it is a cumulative probability distribution, the last probability must be equal to 1.0; if it is an individual probability distribution the sum of the probabilities must be equal to 1.0. The distribution must be terminated by a *.
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An example of patient class data is presented in Figure B-1 for the first six patient classes used in the NAMES II baseline simulation. For example, patient class 2, which is a simple head fracture, consists of urgent patients (Priority 1), having a 50% probability of being ambulatory; there is no mortality threshold time at the entry facility; the critical mortality work unit must be completed within 360 minutes to keep the patients alive and the critical convalescent work unit must be completed within three hours to prevent an increase in the patients' convalescent time. Patients within this class will be evacuated to the fourth level in the system, which in this case represents the hospital. A total of 6 work units must be performed in sequence to treat these patients: first, work unit 6 (litter hauling), followed by work unit 33 (X-ray), work unit 9 (injections), work unit 42 (treatment of head injuries), which is the first aid work unit, the critical mortality work unit and the critical convalescent work unit, then work unit 11 (dressings) and finally work unit 5 (administration). The convalescent time distribution

CLASS

75

1	1	0.	5	180	1	4											
WU	12	6	17	9	15	33	14	41	C	M	F	42	11	13	5	6	
0.	1	.0034	2	.0052	3	.0095	4	.0095	5	.0112	6	.0138	7				
.0172	8	.0198	9	.0233	10	.0250	11	.0258	12	.0267	13	.0301	14				
.0301	15	.0310	16	.0319	17	.0319	18	.0362	19	.0396	20	.0422	21				
.0457	22	.0474	23	.0491	24	.0508	25	.0508	26	.0508	27	.0508	28				
.0534	29	.0534	30	.0568	31	.0568	32	.0577	33	.0594	34	.0629	35				
.0646	36	.0646	37	.0672	38	.0698	39	.0698	40	.0724	41	.0732	42				
.0749	43	.0784	44	.0784	45	.0801	46	.0827	47	.0853	48	.0904	49				
.0913	50	.0956	51	.0956	52	.0965	53	.1034	54	.1051	55	.1059	56				
.1120	57	.1171	58	.1180	59	.1249	60	1.0000	61 *								
2	1	.50	0	360	3	4											
WU	6	6	33	9	42	C	M	F	11	5							
0.	1	.0238	2	.0317	3	.0476	4	.0476	5	.0635	6	.0794	7				
.0873	8	.0952	9	.1032	10	.1190	11	.1190	12	.1508	13	.1746	14				
.1746	15	.1905	16	.2063	17	.2063	18	.2063	19	.2143	20	.2143	21				
.2143	22	.2222	23	.2222	24	.2302	25	.2302	26	.2381	27	.2541	28				
.2540	29	.2540	30	.2619	31	.2857	32	.2937	33	.3016	34	.3016	35				
.3175	36	.3175	37	.3254	38	.3254	39	.3333	40	.3492	41	.3571	42				
.3651	43	.3651	44	.3651	45	.3651	46	.3651	47	.3730	48	.3889	49				
.3889	50	.3889	51	.3889	52	.3889	53	.3968	54	.4048	55	.4048	56				
.4048	57	.4048	58	.4048	59	.4127	60	1.0000	61 *								
3	1	0.	30	180	1	4											
WU	11	6	9	15	33	14	41	C	M	F	42	13	11	5	6		
0.	0	.0611	1	.1156	2	.1508	3	.2038	4	.2450	5	.2945	6				
.3298	7	.3663	8	.3852	9	.4075	10	.4346	11	.4594	12	.4759	13				
.4947	14	.5159	15	.5371	16	.5583	17	.5677	18	.5783	19	.5901	20				
.6101	21	.6184	22	.6302	23	.6419	24	.6537	25	.6643	26	.6796	27				
.6867	28	.6938	29	.7038	30	.7055	31	.7114	32	.7221	33	.7256	34				
.7279	35	.7314	36	.7397	37	.7479	38	.7491	39	.7527	40	.7562	41				
.7597	42	.7597	43	.7639	44	.7621	45	.7633	46	.7633	47	.7656	48				
.7703	49	.7739	50	.7762	51	.7809	52	.7821	53	.7845	54	.7863	55				
.7915	56	.7951	57	.8021	58	.8057	59	.8057	60	1.0000	61 *						
4	2	0.	0	720	6	2											
WU	8	6	12	33	29	C	M	F	11	9	5	6					
0.	0	.2189	1	.3434	2	.4317	3	.4818	4	.5199	5	.5606	6				
.5917	7	.6228	8	.6505	9	.6713	10	.6843	11	.6964	12	.7067	13				
.7180	14	.7292	15	.7370	16	.7465	17	.7535	18	.7595	19	.7630	20				
.7647	21	.7716	22	.7803	23	.7829	24	.7863	25	.7889	26	.7924	27				
.7967	28	.7993	29	.8019	30	.8036	31	.8097	32	.8157	33	.8192	34				
.8218	35	.8227	36	.8253	37	.8287	38	.8313	39	.8339	40	.8365	41				
.8374	42	.8400	43	.8417	44	.8452	45	.8460	46	.8503	47	.8529	48				
.8555	49	.8581	50	.8607	51	.8642	52	.8651	53	.8668	54	.8663	55				
.8676	56	.8685	57	.8702	58	.8702	59	.8728	60	1.0000	61 *						
5	2	0.	0	180	1	2											
WU	5	6	33	43	C	M	F	5	6								
0.	9	.0363	10	.0881	11	.1140	12	.1710	13	.1813	14	.2021	15				
.2435	16	.2642	17	.2953	18	.3161	19	.3212	20	.3316	21	.3627	22				
.3679	23	.3938	24	.4041	25	.4093	26	.4456	27	.4560	28	.4560	29				
.4560	30	.4611	31	.4767	32	.4870	33	.4870	34	.4922	35	.4974	36				
.5130	37	.5181	38	.5233	39	.5285	40	.5440	41	.5544	42	.5544	43				
.5596	44	.5596	45	.5596	46	.5648	47	.5648	48	.5751	49	.5751	50				
.5751	51	.5803	52	.5907	53	.5907	54	.5959	55	.6010	56	.6114	57				
.6114	58	.6218	59	.6321	60	1.0000	61 *										
6	3	0.	0	1440	12	2											
WU	5	6	33	43	C	M	F	5	6								
0.	0	.3304	1	.5927	2	.7251	3	.7894	4	.8550	5	.9015	6				
.9395	7	.9786	8	.9912	9	1.0000	10 *										

Fig. B-1 — Sample patient class data (first 6 of 75 patient classes)

is prepared as a cumulative distribution and specifies that each patient in this class will have a convalescent time of between 2 and 61 days with a 0.2857 probability that his convalescent time will be 32 days or less (if not increased due to delays in treatment).

WORK UNIT DATA GROUP

This data group is identified by the words WORK UNIT and must contain the following information:

- The total number of work units.
- The description of the treater codes and treatment times for each work unit in ascending order as follows:
 - o The work unit number.
 - o The letter T must follow the work unit number designated for triage. If no work unit number is so identified, the model will assume that work unit 3 is the triage work unit.
 - o The number of types of treaters who can perform the work unit.
 - o For each type of treater, a pair of numbers where the first number represents the treater code and the second number represents the treatment time in minutes for the corresponding treater code.

All the numbers in this data group must be integers. Sample work unit input data is presented in Figure B-2. For example, work unit 41 (major surgery) can be performed by 2 treaters; the preferred treater is treater code 1 (general surgeon) who can perform this work unit in 35 minutes; the first alternate treater is treater code 3 (medical general practitioner) who can perform this same work unit in 70 minutes.

The treater codes specified in this data group must be consistent with the treater codes assigned at each treatment facility (see configuration data group). If the treater code and associated treatment time are both zero for a particular work unit number, that work unit number is not applicable. (See work units 26 and 39 in Figure B-2).

PATIENT TYPE DATA GROUP

This group of data is identified by the word TYPE followed by the number of patient types coming in the system (typically 1 or 2). In the NAMES II baseline simulation (see Figure B-3) there are 2 types, inpatients and outpatients.

The data describing each type follows and must be prepared for each type in ascending order.

Field 1 and Field 2. In the current NAMES II model these fields must contain the values 0.0 and 1, respectively.

WORK.UNIT									
45									
1	4	7	45	4	45	6	45	5	45
2	4	3	5	2	5	4	5	6	5
3	4	1	4	3	4	4	5	6	5
4	4	3	30	4	30	2	30	6	30
5	4	3	3	4	3	6	3	5	3
6	1	15	3						
7	3	9	5	3	8	4	9		
8	2	5	2	6	2				
9	3	5	1	6	1	4	1		
10	3	5	15	6	15	4	15		
11	3	6	10	5	10	4	10		
12	4	3	10	4	10	6	10	1	10
13	3	3	6	4	6	6	6		
14	3	6	15	3	15	4	15		
15	4	6	3	1	3	3	3	4	3
16	3	5	15	6	15	4	15		
17	2	4	3	5	3				
18	2	5	9	6	9				
19	3	3	7	4	7	6	7		
20	2	6	45	5	45				
21	2	5	25	6	25				
22	2	7	25	5	25				
23	3	5	10	6	10	4	10		
24	3	1	15	3	15	2	15		
25	3	1	15	3	15	6	15		
26	1	0	0						
27	3	1	9	6	9	5	9		
28	3	2	9	3	9	6	9		
29	3	1	35	3	35	6	35		
30	4	2	8	1	8	4	8	6	8
31	3	13	5	5	5	6	5		
32	3	2	30	4	30	13	30		
33	2	16	8	6	8				
34	2	5	12	6	12				
35	1	14	20						
36	3	10	30	11	30	7	30		
37	4	3	2	4	2	2	2	1	2
38	2	2	12	1	12				
39	1	0	0						
40	1	9	60						
41	2	1	35	3	70				
42	1	19	25						
43	2	18	25	6	50				
44	2	17	45	3	45				
45	2	20	15	13	30				

Fig. B-2 - Sample work unit input data

TYPE													
2													
0.0	1	1.0	1	*									
0.0	0	0.0015	1	0.0017	2	0.0141	3	0.0183	4	0.0206	5	0.0276	6
0.0333	7	0.0370	8	0.0370	9	0.0419	10	0.0534	11	0.0682	12	0.1029	13
0.1044	14	0.1108	15	0.1129	16	0.1178	17	0.1205	18	0.1246	19	0.1353	20
0.1369	21	0.1407	22	0.1445	23	0.1537	24	0.1837	25	0.2838	26	0.2836	27
0.2934	28	0.2987	29	0.3110	30	0.3644	31	0.4178	32	0.4576	33	0.4579	34
0.4755	35	0.5333	36	0.5337	37	0.5515	38	0.5377	39	0.5896	40	0.5965	41
0.6022	42	0.6132	43	0.6133	44	0.6271	45	0.6544	46	0.6591	47	0.6815	48
0.6957	49	0.6983	50	0.6987	51	0.7018	52	0.7426	53	0.7458	54	0.7551	55
0.7698	56	0.7782	57	0.7797	58	0.7838	59	0.7864	60	0.8153	61	0.8183	62
0.8549	63	0.8567	64	0.8532	65	0.8727	66	0.8727	67	0.9033	68	0.9091	69
0.9404	70	0.9411	71	0.9585	72	0.9611	73	0.9912	74	1.0000	75		
*													
0.0	1	0.5	1	0.7	2	0.9	3	1.0	4	*			
0.0000	0	0.018	18	0.023	20	0.029	45	0.302	46	0.309	47	0.316	48
0.436	50	0.460	52	0.534	53	0.551	54	0.555	55	0.618	56	0.760	57
0.811	58	0.822	59	0.870	61	0.881	63	0.896	67	0.950	68	0.956	71
0.962	72	1.000	74										
*													

Fig. B-3 — Sample data for the distribution of patients over each facility level and over each patient class for each type of patient

Field 3 and Field 4. A real number between 0.0 and 1.0, indicating the cumulative proportion of patients of that type entering the evacuation chain at the FEBA (level 1), followed by the integer 1 designating that level.

Field 5 and Field 6. A real number between 0.0 and 1.0, indicating the cumulative proportion of patients of that type entering the chain at facility level 2, followed by the integer 2.

Additional fields are included, as appropriate, to describe the entry levels of all patients of each type. In Figure B-3, for example, all the inpatients enter the baseline simulation at the FEBA, whereas the outpatients are distributed over the 4 levels in the proportions .5, .2, .2 and .1.

Remaining Fields The remaining data fields for each type of patient contain individual or cumulative probability distributions of patients of each type over the patient classes. This data consists of pairs of numbers: the first number is the probability, and must be a real number between 0 and 1; the second number represents the associated patient class. Figure B-3 contains cumulative probability distributions of inpatients and outpatients over the 75 classes employed in the baseline simulation.

PATIENT PRIORITY DATA GROUP

The patient priority data group describes the attributes associated with a given priority. It is identified by the word PRIORITY followed by the number of patient priorities. (This number must be equal to 4 at the present time.)

For each patient priority, the following data must be provided:

- The stabilization time in hours.
- The evacuation queue threshold time in hours.
- The additional treatment threshold time in minutes.

All these numbers are decimal numbers. In Figure B-4, for example, the stabilization time of a Priority 1 patient is 24 hours, there is no evacuation queue threshold time and the additional treatment threshold is 20 minutes.

PRIORITY		
4		
24.	0.	20.
12.	1.	80.
0.	24.	1460.
0.	24.	1460.

Fig. B-4 -- Sample patient
priority data

ARRIVAL RATES DATA GROUP

This group of data specifies the average rates of arrivals for both inpatients and outpatients for each day of the simulation, preceded by the proportional distribution of these arrivals over each hour of the day. This section is identified by the word RATES and consists of the following elements:

- The proportion of inpatients arriving during each hour of the day. This consists of 24 real numbers, one for each hour of the day. The sum of these numbers must be equal to 1.0.
- The proportion of outpatients arriving during each hour of the day. This list should also consist of 24 real numbers adding up to 1.0.
- The number of days for which average patient arrival data is provided (length of combat period).
- The average number of inpatients for each day. This list consists of one real number for each day. There must be as many entries in the list as specified by the number of days field.
- The average number of outpatients for each day.

Figure B-5 shows a sample of patient arrival rates.

RATES									
.01	.01	.01	.01	.03	.05	.05	.07	.10	.07
.05	.04	.04	.05	.07	.10	.07	.05	.05	.03
.01	.01	.01	.01						
.0	.0	.0	.0	.0	.0	.05	.80	.05	.0
.0	.0	.05	.0	.0	.05	.0	.0	.0	.0
.0	.0	.0	.0						
15									
241.0	680.0	512.0	222.0	158.0	321.0	217.0	222.0		
92.0	255.0	348.0	168.0	60.0	65.0	54.0			
150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	

Fig. B-5 — Sample patient arrival data

CONFIGURATION DATA GROUP

The configuration data allows the user to easily specify the structure of the evacuation chain in the combat zone, to allocate the various resources at each facility level and to specify the evacuation rules to be used at each facility level. This data is entirely free-form and is keyword oriented. It contains the following information:

- A description of the type of evacuation vehicles assigned in the evacuation chain.
- A description of the default evacuation rules (if any) and evacuation vehicle speeds.
- A description of each treatment and evacuation level in the system together with the resources and parameters associated with a given level.
- A description of required operational inputs which control the simulation.
- Additional inputs which enable the user to select the type, level of detail and frequency of the outputs of the simulation.

The description of the types of evacuation vehicles assigned in the evacuation chain is identified by the keyword VEHICLES followed by an integer number specifying the number of different evacuation vehicle types. Each vehicle type is then identified by a name and by its mode of transportation, either AIR or GROUND.

The description of the default evacuation rules and vehicle speeds is identified by the keyword DEFAULTS. This block of data can be supplied when the evacuation rules or vehicle speeds are identical at each facility level. It provides the user with a concise way of specifying these characteristics of the system. Default rules or vehicle speeds can be overridden at a specific facility level. The input formats for these rules are described below under RULES.

The description of the treatment and evacuation levels present in the system is identified by the keyword LEVELS followed by an integer number specifying the number of levels in the chain. Then, for each level in the chain starting with the FEBA level and progressing toward the rear, the following information must be provided:

- The name of the level (e.g., FEBA, BAS, CS, etc...) This is an alphanumeric field of less than 10 characters chosen by the user. It is used in the model outputs to identify the level.
- The number of facility units at the given level. This must be an integer number. In addition at the present time the ratio of the number of facility units at a given level over the number of facility units at the level to its immediate rear must be a whole number (e.g., if there are 10 facility units at the BAS level, and if the next level to the rear is a CS level, the user must specify either 1, 2, 5 or 10 CS since those are the only numbers which divide exactly into 10).
- The remainder of the data describing a facility level is described using English like keywords. Each keyword identifies the attribute of the level and is followed by data which is a function of the keyword. The keywords can appear in any order and the description of a facility level is terminated by the keyword DONE. It should be noted that, at the present time, all the facility units within a facility level must be identical. The keywords to describe a facility level are:
 - o DISTANCE which specifies the distance between a level and the FEBA. The distance is an integer number which can be in any unit provided it is consistent with the vehicle speeds.
 - o BEDS which specifies the number of convalescent beds allocated at each unit within the level. It must be an integer number.
 - o EVAC which specifies the evacuation policy in force at the level. It must be an integer number of days.
 - o VEHICLES which specifies the number and type of vehicles assigned at each facility unit within the level. The input associated with this keyword consists of three fields:
 - The first field is the vehicle type which is the alphanumeric name of the vehicle as entered in the VEHICLES data.
 - The second field is the number of vehicles assigned at each facility unit within the level.

- The third field is the vehicle capacity (number of spaces aboard the vehicle).
- o TREATER which specifies the type and number of treaters assigned at each facility unit within the level. The input data describing the treater assignment consists of an arbitrarily long list of pairs of numbers. The first number is the treater code, the second number is the number of treaters of that type which are assigned. The treater codes must be consistent with those codes associated with the work unit data. The list of assigned treaters must be terminated with a \$.
- o LOAD which specifies the proportion of inpatients or outpatients which enter the system at this level. It contains the following data fields:
 - First, the word INPATIENT or OUTPATIENT to identify the type of patient.
 - Second, the proportion associated with this patient type. It must be expressed as a real number between 0.0 and 1.0. In addition, the sum of these numbers for each type of patient over all the levels must add up to 1.0.
 - The list is terminated with a \$.
- o SPEED which specifies the speed of the evacuation vehicles between this level and the next level to the rear. It contains the following data fields:
 - First, the vehicle type which is the alphanumeric name of the vehicle as entered in the VEHICLES data.
 - Second, the vehicle speed in any unit consistent with the distances.
- o SEC.FAC which specifies the patient classes which should be evacuated to this level, if possible. The list consists of a sequence of integer numbers each identifying a patient class. It is terminated by a \$. Patients of the specified classes will be evacuated to this facility provided they are coming from a facility closer to the FEBA. If they are already at or beyond their secondary facility, they will be evacuated to the next facility to the rear.

o RULES

which identifies the vehicle evacuation rules to be used at the facility. This group of data consists of a sequence of keywords identifying the type of rule and the rule itself within each type. It must be terminated by the word END.RULE.

Within each rule, the vehicle to which it applies is specified by following the rule name with the name of the vehicle. The rules which can be selected are the following:

- REQUEST to indicate the levels from which a given vehicle can be requested. It consists of a sequence of facility level names and is terminated by a , and a \$.
- LOAD.1 to indicate the rule to be used to load patients at a vehicle's first stop. It is followed by the rule number:
 - 1: Load none.
 - 2: Load all by priority.
 - 3: Load selected priorities (In this case the permitted priorities follow.).
- DESTN.1 to indicate the destination of the vehicle after its first stop, based on its state (1 for empty, 2 for not empty). Following each state, the applicable rule can be specified as:
 - 1: User selected facility followed by the facility name or HOME.
 - 2: Remain at present facility.
 - 3: Closest facility to which any patient is designated to go.
 - 4: As far to the rear as required by any patient.
 - 5: Facility required by highest priority patient.

- UNLOAD.1 to indicate the rule to be followed to unload patients at vehicle's second stop (a vehicle always arrives empty at its first stop):

- 1: Unload none.
- 2: Unload all.
- 3: Unload patients designated for evacuation to this facility.
- 4: Unload designated priorities.

- LOAD.2 to indicate the rule to be followed for patient loading at a vehicle's second stop. It is based on the following states:

- 1: vehicle empty and other vehicle enroute
- 2: vehicle empty and no other vehicle enroute
- 3: vehicle not empty and other vehicle enroute
- 4: vehicle not empty and no other vehicle enroute

The applicable rules include those of LOAD.1 plus a fourth rule:

- 4: Load those designated to go to facilities which are the destinations of patients already on board.

- DESTN.2 to indicate the rule to be followed for dispatching a vehicle after its second stop. The inputs are similar to the DESTN.1 rules.
- UNLOAD.2 to indicate the rule to be followed to unload patients at a vehicle's third or subsequent stops. The inputs are similar to the UNLOAD.1 rule.

The operational inputs which must be provided for a simulation are also identified by keywords. They are identified by the keyword OPERATION and can be presented in any order; the list must be terminated by the word DONE. They are:

- o DAYS to specify the number of days of simulation. It must be an integer number.

- o DAWN and DUSK to specify the range of daylight hours. Each time must be input as a real number using military clock hours, not A.M. or P.M.
- o AIR.TRIG and GRND.TRIG to specify the number of non-urgent patients which trigger a request for an air vehicle or a ground vehicle.
- o CONV to specify the multiplicative factor by which convalescent time is increased for patients who do not receive their critical convalescent work unit within the allowable delay time.
- o POOL to specify the distance of the POOL to the FEBA and the type of evacuation vehicles assigned at the pool. The input fields associated with this keyword are identical to those for the VEHICLES keyword.

The additional input elements are used to control the type of statistics to be produced by the model, the printing frequency of these statistics, etc... They are:

- o ECHO to provide a listing of the medical and configuration input data (See input reports.).
- o FREQUENCY to specify the printing frequency of the statistics in days.
- o RUN.NO to identify the run, the run number is printed at the top of every page.

Figures B-6 and B-7 present the sample configuration data for the baseline simulation. In this example, there are four levels of evacuation called, respectively, FEBA, BAS, CS and HOSP. The FEBA has 36 landing zones with 10 medics at each landing zone; there are 9 BAS, 3 miles from the FEBA; each BAS has 1 ambulance with a capacity of 8 and a speed of 25 miles/hour; there are no beds or evacuation policy at the BAS; there are 2 treaters of type 3, 15 treaters of type 5, etc....The CS and the HOSP are described in the same manner. The simulation will run for 15 days, daylight hours are from 0600 to 1800, 6 non-urgent patients will trigger an air vehicle and 2 a ground vehicle. The convalescent time of patients will be doubled for patients who do not receive their critical convalescent work unit in the required time. The MEDEVAC pool has 16 helicopters with a capacity of 24. The speed of the helicopters and ambulances is 100 mph and 25 mph, respectively.

Figure B-8 is a sample format for use by the model user in providing configuration data. The data shown is for the clearing station level (level 3) of the baseline simulation.

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NAVAL RESEARCH LAB WASHINGTON D C

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NAMES II (NAVY AMPHIBIOUS MEDICAL EVACUATION SIMULATION) USER'S--ETC(U)

JUL 77 P B RICHARDS, J R FLETCHER, C DELFOSSE

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2 OF 2

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END
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```

VEHICLES 2
  HELICOPTER  AIP
  AMBULANCE   GROUND
DEFAULTS
RULES
  REQUEST  HELICOPTER POOL  , 1
  LOAD.1   AMBULANCE 2     ,
           HELICOPTER 2     , 1
  DESTN.1  AMBULANCE 1 1 HOME ,
           2 3             ,
           HELICOPTER 1 1 HOME ,
           2 3             , 1
  UNLOAD.1 AMBULANCE 3     , 1
           HELICOPTER 3     , 1
  LOAD.2   AMBULANCE 1 2     ,
           2 2             ,
           3 2             ,
           4 2             ,
           HELICOPTER 1 2     ,
           2 2             ,
           3 2             ,
           4 2             , 1
  DESTN.2  AMBULANCE 1 1 HOME ,
           2 3             ,
           HELICOPTER 1 1 HOME ,
           2 3             , 1
  UNLOAD.2 AMBULANCE 3     , 1
           HELICOPTER 3     , 1
  END.RULE
SPEED  HELICOPTER 100
       AMBULANCE 25
DONE
LEVELS 4
  FERRA 36
  LOAD  INPATIENT 1.0
        OUTPATIENT 0.5
  TREATERS 0 10
  RULES
    REQUEST  AMBULANCE  PAS  CS  HCSP , 1
    END.RULE
  DONE
  PAS 9
  DISTANCE 3
  VEHICLES
    AMBULANCE 1 8 1
    OUTPATIENT 0.2 1
  LOAD
    3 2 5 15 5 6 15 1 1
  TREATERS
    4 5 6 9 11 13 17 20 24
    26 32 41 42 45 46 48 54 57 59 59
    61 63 64 67 1
  SEC.FAC
  RULES
    REQUEST  AMBULANCE  PAS  CS  HCSP , 1
    END.RULE
  DONE

```

Fig. B-6 — Sample configuration data for baseline simulation


```

CS      3
DISTANCE 12
VEHICLES AMBULANCE 3 8 2
LOAD      OUTPATIENT 0.2 5
BEDS      60
EVAC      3
TREATERS  1 2 2 2 3 2 5 12 6 10 7 4 13 2
          15 4 16 2 19 4 5
SEC.FAC   30 34 51 52 53 50 52 63 70 73 74
          5
RULES
  REQUEST AMBULANCE CS HOSP , 5
  END.RULE
DONE
HOSP      1
DISTANCE 30
VEHICLES AMBULANCE 6 8 5
LOAD      OUTPATIENT 0.1 5
BEDS      200
EVAC      15
TREATERS  1 2 2 19 3 6 4 26 5 27 6 16
          7 3 9 1 10 1 11 1 13 3 14 1
          15 6 16 3 17 1 18 11 19 3 20 1 5
SEC.FAC   1 2 3 7 8 10 12 14 15 16 19
          19 21 22 23 25 27 28 29 31 33 35
          36 37 38 39 40 43 44 47 49 50 55
          56 65 66 69 71 72 75 5
DONE
OPERATION
  DAYS      15
  DAWN      6.
  DUSK      18.
  AIR.TRIG  6
  GRND.TRIG 2
  CONV      2.
  POOL      30
          HELICOPTER 16 24 5
DONE
OUTPUT
  FREQUENCY 1.0
  RUN.NO    II-39
DONE

```

Fig. B-7 — Sample configuration data for baseline simulation

NUMBER OF LEVELS <u>4</u>	
THIS IS FACILITY LEVEL <u>k=3</u> (CS) NUMBER OF UNITS <u>3</u> DISTANCE FROM FEBA <u>12</u> MILES	
ASSIGNED VEHICLES	NUMBER SPACES
AMBULANCE	<u>3</u>
HELICOPTER	<u>0</u>
SPEED BETWEEN k & k+1	AMBULANCE <u>25</u> mph
	HELICOPTERS <u>100</u> mph
LOAD - % INPATIENTS	<u>0</u>
% OUTPATIENTS	<u>0.2</u>
NO. OF BEDS	<u>60</u>
EVAC POLICY	<u>3</u>
TREATERS (CODE & NO.) <u>1 2 2 2 3 2 5 12 6 10 7 4 13 2 15 4 16 2 18 4</u>	
SECFAC (CLASSES) <u>30 34 51 52 53 60 62 68 70 73 74</u>	
LEVELS VEH. REQUESTED FROM - AMBULANCE CS HOSP	
	HELICOPTER POOL
THIS IS VEHICLE'S FIRST STOP; IT ARRIVES EMPTY	
PATIENTS LOADED	RULE PRIORITIES
AMBULANCE	<u>2</u>
HELICOPTER	<u>2</u>
DESTINATION	STATE RULE FACILITY
AMBULANCE	Empty <u>1</u> HOME
	Not Empty <u>3</u>
HELICOPTER	Empty <u>1</u> HOME
	Not Empty <u>3</u>
THIS IS VEHICLE'S SECOND STOP	
PATIENTS UNLOADED	RULE PRIORITIES
AMBULANCE	<u>3</u>
HELICOPTER	<u>3</u>
PATIENTS LOADED	STATE* RULE PRIORITIES
AMBULANCE	1 <u>2</u>
	2 <u>2</u>
	3 <u>2</u>
	4 <u>2</u>
HELICOPTER	1 <u>2</u>
	2 <u>2</u>
	3 <u>2</u>
	4 <u>2</u>
DESTINATION	STATE RULE FACILITY
AMBULANCE	Empty <u>1</u> HOME
	Not Empty <u>3</u>
HELICOPTER	Empty <u>1</u> HOME
	Not Empty <u>3</u>
THIS IS VEHICLE'S THIRD/SUBSEQUENT STOP	
PATIENTS UNLOADED	RULE PRIORITIES
AMBULANCE	<u>3</u>
HELICOPTER	<u>3</u>

* State 1: vehicle empty and other vehicle enroute.
 State 2: vehicle empty and no other vehicle enroute.
 State 3: vehicle not empty and other vehicle enroute.
 State 4: vehicle not empty and no other vehicle enroute.

Fig. B-8 — Sample user format for configuration data

APPENDIX C

COMPUTER REPORTS OF
NAMES II BASELINE SIMULATION
INPUTS

===== INPUT DATA. =====

```

1. CLASS
2. 75
3. 1 1 1. 5 181 1 4
4. 40 12 6 17 3 15 33 14 41 C M F 42 11 13 5 6
5. 1. 1 .0134 2 .0052 3 .0095 4 .0095 5 .0112 6 .0138 7
6. .0172 8 .0114 9 .0233 10 .0250 11 .0254 12 .0267 13 .0301 14
7. .0301 15 .0311 16 .0319 17 .0319 18 .0362 19 .0396 20 .0422 21
8. .0457 22 .0474 23 .0491 24 .0508 25 .0508 26 .0534 27 .0534 28
9. .0534 29 .0534 30 .0568 31 .0568 32 .0577 33 .0594 34 .0629 35
10. .0646 36 .0646 37 .0672 38 .0694 39 .0694 40 .0724 41 .0732 42
11. .0749 43 .0744 44 .0784 45 .0811 46 .0827 47 .0853 48 .0904 49
12. .0913 50 .0956 51 .0956 52 .0965 53 .1034 54 .1051 55 .1059 56
13. .1120 57 .1171 58 .1190 59 .1244 60 1.0000 61 *
14. 2 1 .50 1 350 3 4
15. 40 6 6 33 9 42 C M F 11 5
16. 1. 1 .0234 2 .0317 3 .0476 4 .0476 5 .0635 6 .0794 7
17. .0473 8 .0452 9 .0332 10 .0330 11 .0330 12 .0504 13 .0746 14
18. .0746 15 .0905 16 .0963 17 .0963 18 .0963 19 .0963 20 .0963 21
19. .0963 22 .0963 23 .0963 24 .0963 25 .0963 26 .0963 27 .0963 28
20. .0963 29 .0963 30 .0963 31 .0963 32 .0963 33 .0963 34 .0963 35
21. .0963 36 .0963 37 .0963 38 .0963 39 .0963 40 .0963 41 .0963 42
22. .0963 43 .0963 44 .0963 45 .0963 46 .0963 47 .0963 48 .0963 49
23. .0963 50 .0963 51 .0963 52 .0963 53 .0963 54 .0963 55 .0963 56
24. .0963 57 .0963 58 .0963 59 .0963 60 1.0000 61 *
25. 3 1 1. 33 181 1 4
26. 40 11 6 9 15 33 14 41 C M F 42 13 11 5 6
27. 1. 1 .0631 2 .1166 3 .1538 4 .2038 5 .2451 6 .2945 7
28. .3298 8 .3663 9 .3852 10 .4075 11 .4346 12 .4594 13 .4759 14
29. .4947 15 .5159 16 .5371 17 .5583 18 .5677 19 .5743 20 .5911 21
30. .6101 22 .6134 23 .6302 24 .6419 25 .6537 26 .6643 27 .6736 28
31. .6867 29 .6934 30 .7004 31 .7055 32 .7114 33 .7221 34 .7256 35
32. .7279 36 .7314 37 .7337 38 .7479 39 .7491 40 .7527 41 .7562 42
33. .7597 43 .7597 44 .7597 45 .7597 46 .7597 47 .7597 48 .7597 49
34. .7597 50 .7597 51 .7597 52 .7597 53 .7597 54 .7597 55 .7597 56
35. .7597 57 .7597 58 .7597 59 .7597 60 1.0000 61 *
36. 4 2 1. 1 720 5 2
37. 40 8 6 12 37 23 C M F 11 9 5 6
38. 1. 1 .2129 2 .3434 3 .4317 4 .4818 5 .5199 6 .5616 7
39. .5917 8 .6224 9 .6535 10 .6713 11 .6943 12 .7057 13
40. .7190 14 .7232 15 .7370 16 .7465 17 .7535 18 .7595 19 .7630 20
41. .7647 21 .7716 22 .7803 23 .7829 24 .7863 25 .7889 26 .7924 27
42. .7967 28 .7993 29 .8019 30 .8135 31 .8197 32 .8157 33 .8192 34
43. .8214 35 .8227 36 .8253 37 .8247 38 .8313 39 .8339 40 .8355 41
44. .8474 42 .8400 43 .8417 44 .8452 45 .8460 46 .8533 47 .8529 48
45. .8555 49 .8541 50 .8607 51 .8642 52 .8651 53 .8664 54 .8664 55
46. .8676 56 .8645 57 .8712 58 .8712 59 .8724 60 1.0000 61 *
47. 5 2 1. 1 140 1 2
48. 40 5 6 33 43 C M F 5 6
49. 1. 1 .0343 2 .0481 3 .0881 4 .1140 5 .1711 6 .1813 7
50. .2435 8 .2642 9 .2953 10 .3161 11 .3212 12 .3316 13 .3527 14
51. .3679 15 .3934 16 .4041 17 .4193 18 .4456 19 .4561 20 .4561 21
52. .4561 22 .4611 23 .4767 24 .4870 25 .4870 26 .4922 27 .4974 28

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53 .	.5130	37	.5181	38	.5233	39	.5285	40	.5340	41	.5394	42	.5444	43
54 .	.5536	44	.5596	45	.5656	46	.5718	47	.5780	48	.5841	49	.5901	50
55 .	.5951	51	.6013	52	.6075	53	.6137	54	.6199	55	.6261	56	.6323	57
56 .	.6385	58	.6447	59	.6509	60	.6571	61	.6633	62	.6695	63	.6757	64
57 .	.6819	65	.6881	66	.6943	67	.7005	68	.7067	69	.7129	70	.7191	71
58 .	.7253	72	.7315	73	.7377	74	.7439	75	.7501	76	.7563	77	.7625	78
59 .	.7687	79	.7749	80	.7811	81	.7873	82	.7935	83	.7997	84	.8059	85
60 .	.8121	86	.8183	87	.8245	88	.8307	89	.8369	90	.8431	91	.8493	92
61 .	.8555	93	.8617	94	.8679	95	.8741	96	.8803	97	.8865	98	.8927	99
62 .	.8989	100	.9051	101	.9113	102	.9175	103	.9237	104	.9299	105	.9361	106
63 .	.9423	107	.9485	108	.9547	109	.9609	110	.9671	111	.9733	112	.9795	113
64 .	.9857	114	.9919	115	.9981	116	1.0043	117	1.0105	118	1.0167	119	1.0229	120
65 .	1.0291	121	1.0353	122	1.0415	123	1.0477	124	1.0539	125	1.0601	126	1.0663	127
66 .	1.0725	128	1.0787	129	1.0849	130	1.0911	131	1.0973	132	1.1035	133	1.1097	134
67 .	1.1159	135	1.1221	136	1.1283	137	1.1345	138	1.1407	139	1.1469	140	1.1531	141
68 .	1.1593	142	1.1655	143	1.1717	144	1.1779	145	1.1841	146	1.1903	147	1.1965	148
69 .	1.2027	149	1.2089	150	1.2151	151	1.2213	152	1.2275	153	1.2337	154	1.2399	155
70 .	1.2461	156	1.2523	157	1.2585	158	1.2647	159	1.2709	160	1.2771	161	1.2833	162
71 .	1.2895	163	1.2957	164	1.3019	165	1.3081	166	1.3143	167	1.3205	168	1.3267	169
72 .	1.3329	170	1.3391	171	1.3453	172	1.3515	173	1.3577	174	1.3639	175	1.3701	176
73 .	1.3763	177	1.3825	178	1.3887	179	1.3949	180	1.4011	181	1.4073	182	1.4135	183
74 .	1.4197	184	1.4259	185	1.4321	186	1.4383	187	1.4445	188	1.4507	189	1.4569	190
75 .	1.4631	191	1.4693	192	1.4755	193	1.4817	194	1.4879	195	1.4941	196	1.5003	197
76 .	1.5065	198	1.5127	199	1.5189	200	1.5251	201	1.5313	202	1.5375	203	1.5437	204
77 .	1.5499	205	1.5561	206	1.5623	207	1.5685	208	1.5747	209	1.5809	210	1.5871	211
78 .	1.5933	212	1.5995	213	1.6057	214	1.6119	215	1.6181	216	1.6243	217	1.6305	218
79 .	1.6367	219	1.6429	220	1.6491	221	1.6553	222	1.6615	223	1.6677	224	1.6739	225
80 .	1.6801	226	1.6863	227	1.6925	228	1.6987	229	1.7049	230	1.7111	231	1.7173	232
81 .	1.7235	233	1.7297	234	1.7359	235	1.7421	236	1.7483	237	1.7545	238	1.7607	239
82 .	1.7669	240	1.7731	241	1.7793	242	1.7855	243	1.7917	244	1.7979	245	1.8041	246
83 .	1.8103	247	1.8165	248	1.8227	249	1.8289	250	1.8351	251	1.8413	252	1.8475	253
84 .	1.8537	254	1.8599	255	1.8661	256	1.8723	257	1.8785	258	1.8847	259	1.8909	260
85 .	1.8971	261	1.9033	262	1.9095	263	1.9157	264	1.9219	265	1.9281	266	1.9343	267
86 .	1.9405	268	1.9467	269	1.9529	270	1.9591	271	1.9653	272	1.9715	273	1.9777	274
87 .	1.9839	275	1.9901	276	1.9963	277	2.0025	278	2.0087	279	2.0149	280	2.0211	281
88 .	2.0273	282	2.0335	283	2.0397	284	2.0459	285	2.0521	286	2.0583	287	2.0645	288
89 .	2.0707	289	2.0769	290	2.0831	291	2.0893	292	2.0955	293	2.1017	294	2.1079	295
90 .	2.1141	296	2.1203	297	2.1265	298	2.1327	299	2.1389	300	2.1451	301	2.1513	302
91 .	2.1575	303	2.1637	304	2.1699	305	2.1761	306	2.1823	307	2.1885	308	2.1947	309
92 .	2.2009	310	2.2071	311	2.2133	312	2.2195	313	2.2257	314	2.2319	315	2.2381	316
93 .	2.2443	317	2.2505	318	2.2567	319	2.2629	320	2.2691	321	2.2753	322	2.2815	323
94 .	2.2877	324	2.2939	325	2.2999	326	2.3061	327	2.3123	328	2.3185	329	2.3247	330
95 .	2.3309	331	2.3369	332	2.3431	333	2.3493	334	2.3555	335	2.3617	336	2.3679	337
96 .	2.3741	338	2.3803	339	2.3865	340	2.3927	341	2.3989	342	2.4051	343	2.4113	344
97 .	2.4175	345	2.4237	346	2.4299	347	2.4361	348	2.4423	349	2.4485	350	2.4547	351
98 .	2.4609	352	2.4671	353	2.4733	354	2.4795	355	2.4857	356	2.4919	357	2.4981	358
99 .	2.5043	359	2.5105	360	2.5167	361	2.5229	362	2.5291	363	2.5353	364	2.5415	365
100 .	2.5477	366	2.5539	367	2.5601	368	2.5663	369	2.5725	370	2.5787	371	2.5849	372
101 .	2.5911	373	2.5973	374	2.6035	375	2.6097	376	2.6159	377	2.6221	378	2.6283	379
102 .	2.6345	380	2.6407	381	2.6469	382	2.6531	383	2.6593	384	2.6655	385	2.6717	386
103 .	2.6779	387	2.6841	388	2.6903	389	2.6965	390	2.7027	391	2.7089	392	2.7151	393
104 .	2.7213	394	2.7275	395	2.7337	396	2.7399	397	2.7461	398	2.7523	399	2.7585	400
105 .	2.7647	401	2.7709	402	2.7771	403	2.7833	404	2.7895	405	2.7957	406	2.8019	407
106 .	2.8081	408	2.8143	409	2.8205	410	2.8267	411	2.8329	412	2.8391	413	2.8453	414
107 .	2.8515	415	2.8577	416	2.8639	417	2.8701	418	2.8763	419	2.8825	420	2.8887	421
108 .	2.8949	422	2.9011	423	2.9073	424	2.9135	425	2.9197	426	2.9259	427	2.9321	428
109 .	2.9383	429	2.9445	430	2.9507	431	2.9569	432	2.9631	433	2.9693	434	2.9755	435
110 .	2.9817	436	2.9879	437	2.9941	438	3.0003	439	3.0065	440	3.0127	441	3.0189	442
111 .	3.0251	443	3.0313	444	3.0375	445	3.0437	446	3.0499	447	3.0561	448	3.0623	449
112 .	3.0685	450	3.0747	451	3.0809	452	3.0871	453	3.0933	454	3.0995	455	3.1057	456
113 .	3.1119	457	3.1181	458	3.1243	459	3.1305	460	3.1367	461	3.1429	462	3.1491	463
114 .	3.1553	464	3.1615	465	3.1677	466	3.1739	467	3.1801	468	3.1863	469	3.1925	470
115 .	3.1987	471	3.2049	472	3.2111	473	3.2173	474	3.2235	475	3.2297	476	3.2359	477
116 .	3.2421	478	3.2483	479	3.2545	480	3.2607	481	3.2669	482	3.2731	483	3.2793	484
117 .	3.2855	485	3.2917	486	3.2979	487	3.3041	488	3.3103	489	3.3165	490	3.3227	491
118 .	3.3289	492	3.3351	493	3.3413	494	3.3475	495	3.3537	496	3.3599	497	3.3661	498
119 .	3.3723	499	3.3785	500	3.3847	501	3.3909	502	3.3971	503	3.4033	504	3.4095	505
120 .	3.4157	506	3.4219	507	3.4281	508	3.4343	509	3.4405	510	3.4467	511	3.4529	512
121 .	3.4591	513	3.4653	514	3.4715	515	3.4777	516	3.4839	517	3.4901	518	3.4963	519
122 .	3.5025	520	3.5087	521	3.5149	522	3.5211	523	3.5273	524	3.5335	525	3.5397	526
123 .	3.5459	527	3.5521	528	3.5583	529	3.5645	530	3.5707	531	3.5769	532	3.5831	533
124 .	3.5893	534	3.5955	535	3.6017	536	3.6079	537	3.6141	538	3.6203	539	3.6265	540
125 .	3.6327	541	3.6389	542	3.6451	543	3.6513	544	3.6575	545	3.6637	546	3.6699	547
126 .	3.6761	548	3.6823	549	3.6885	550	3.6947	551	3.7009	552	3.7071	553	3.7133	554
127 .	3.7195	555	3.7257	556	3.7319	557	3.7381	558	3.7443	559	3.7505	560	3.7567	561
128 .	3.7629	562	3.7691	563	3.7753	564	3.7815	565	3.7877	566	3.7939	567	3.7999	568
129 .	3.8061	569	3.8123	570	3.8185	571	3.8247	572	3.8309	573	3.8371	574	3.8433	575
130 .	3.8495	576	3.8557	577	3.8619	578	3.8681	579	3.8743	580	3.8805	581	3.8867	582
131 .	3.8929	583	3.8991	584	3.9053	585	3.9115	586	3.9177	587	3.9239	588	3.9301	589
132 .	3.9363	590	3.9425	591	3.9487	592	3.9549	593	3.9611	594	3.9673	595	3.9735	596
133 .	3.9797	597	3.9859	598	3.9921	599	3.9983	600	4.0045	601	4.0107	602	4.0169	603
134 .	4.0231	604	4.0293	605	4.0355	606	4.0417	607	4.0479	608	4.0541	609	4.0603	610
135 .	4.0665	611	4.0727	612	4.0789	613	4.0851	614	4.0913	615	4.0975	616	4.1037	617
136 .	4.1099	618	4.1161	619	4.1223	620	4.1285	621	4.1347	622	4.1409	623	4.1471	624
137 .	4.1533	625	4.1595	626	4.1657	627	4.1719	628	4.1781	629	4.1843	630	4.1905	631
138 .	4.1967	632	4.2029	633	4.2091	634	4.2153	635	4.2215	636	4.2277	637</		

108	.3444	7	.4218	8	.4527	9	.4846	10	.5121	11	.5271	12	.5579	13
109	.5918	14	.6088	15	.6344	16	.6552	17	.6817	18	.7104	19	.7295	20
110	.7444	21	.7641	22	.7848	23	.8123	24	.8135	25	.8221	26	.8332	27
111	.8433	28	.8543	29	.8645	30	.8767	31	.8905	32	.8981	33	.9081	34
112	.9166	35	.9235	36	.9334	37	.9378	38	.9431	39	.9474	40	.9575	41
113	.9617	42	.9681	43	.9752	44	.9846	45	.9931	46	1.0000	47	*	
114	14	1	J.	J	72J	5	4							
115	WU	7	6	9	35	C	M	F	11	34	5	6		
116	J.	60	1.0000	61	*									
117	15	2	1.00	J	72J	6	4							
118	WU	5	9	35	C	M	F	11	38	5				
119	J.	J	.1865	1	.1586	2	.1466	3	.2411	4	.2753	5	.3318	6
120	.3238	7	.3419	8	.3557	9	.3678	10	.3767	11	.3844	12	.3932	13
121	.3981	14	.4042	15	.4075	16	.4157	17	.4218	18	.4262	19	.4295	20
122	.4345	21	.4361	22	.4393	23	.4411	24	.4422	25	.4444	26	.4482	27
123	.4493	28	.4515	29	.4526	30	.4543	31	.4559	32	.4571	33	.4598	34
124	.4609	35	.4644	36	.4686	37	.4733	38	.4714	39	.4741	40	.4767	41
125	.4769	42	.4780	43	.4807	44	.4824	45	.4873	46	.4895	47	.4917	48
126	.4923	49	.4956	50	.4967	51	.4983	52	.5011	53	.5022	54	.5033	55
127	.5161	56	.5183	57	.5127	58	.5154	59	.5165	60	1.1000	61	*	
128	15	2	J.	5	12J	1	4							
129	WU	10	6	17	9	15	41	C	M	F	42	11	13	5
130	J.	26	.1219	27	.1395	28	.1732	29	.1339	30	.1184	31	.1272	32
131	.1447	33	.1711	34	.1886	35	.1974	36	.2193	37	.2281	38	.2500	39
132	.2675	40	.2675	41	.2807	42	.2942	43	.3114	44	.3114	45	.3158	46
133	.3202	47	.3246	48	.3553	49	.3643	50	.3950	51	.4123	52	.4299	53
134	.4786	54	.467J	55	.4518	56	.4635	57	.4649	58	.4649	59	.4693	60
135	1.0000	61	*											
136	17	3	1.00	J	72J	6	2							
137	WU	5	9	29	C	M	F	11	11	5				
138	J.	0	.1000	1	.1539	2	.2532	3	.3371	4	.4148	5	.4597	6
139	.5226	7	.5935	8	.6435	9	.6971	10	.7177	11	.7468	12	.7742	13
140	.8116	14	.8213	15	.8532	16	.8742	17	.9032	18	.9177	19	.9339	20
141	.9444	21	.9541	22	.9694	23	.9823	24	.9855	25	1.1000	26	*	
142	14	3	1.00	0	1440	12	4							
143	WU	4	8	35	C	M	F	38	5					
144	J.	0	.1455	1	.2817	2	.4143	3	.5035	4	.5709	5	.6330	6
145	.6886	7	.7211	8	.7461	9	.7692	10	.7859	11	.8107	12	.8109	13
146	.8211	14	.8341	15	.8415	16	.8443	17	.8489	18	.8545	19	.8573	20
147	.8610	21	.8648	22	.8656	23	.8684	24	.8693	25	.8713	26	.8721	27
148	.8758	28	.8777	29	.8777	30	.8735	31	.8795	32	.8795	33	.8842	34
149	.8863	35	.8869	36	.8879	37	.8897	38	.8897	39	.8925	40	.8953	41
150	.8990	42	.8999	43	.9018	44	.9027	45	.9045	46	.9045	47	.9092	48
151	.9101	49	.9120	50	.9147	51	.9147	52	.9184	53	.9184	54	.9222	55
152	.9231	56	.9243	57	.9249	58	.9268	59	.9268	60	1.0000	61	*	
153	19	3	1.00	J	J	12	4							
154	WU	2	35	C	5									
155	J.	0	.0829	1	.1261	2	.2018	3	.2721	4	.3351	5	.3838	6
156	.4372	7	.4396	8	.4567	9	.4865	10	.5027	11	.5189	12	.5333	13
157	.5495	14	.5550	15	.5622	16	.5658	17	.5756	18	.5838	19	.5874	20
158	.5910	21	.5910	22	.5982	23	.6054	24	.6154	25	.6134	26	.6126	27
159	.6162	28	.6143	29	.6306	30	.6342	31	.6396	32	.6396	33	.6432	34
160	.6468	35	.6468	36	.6486	37	.6541	38	.6559	39	.6577	40	.6631	41
161	.6631	42	.6631	43	.6703	44	.6703	45	.6721	46	.6757	47	.6793	48
162	.6811	49	.6811	50	.6811	51	.6829	52	.6865	53	.6937	54	.6955	55

153 .	.6955	46	.7027	57	.7345	59	.7381	59	.7399	61	1.1111	61 *
154 .	20	3	1.00	0	0	12	2					
155 .	WU	2	8	C	5							
156 .	.0117	1	.1157	1	.2017	2	.2721	3	.3275	4	.3712	5
157 .	.4624	7	.4664	8	.4919	9	.5104	10	.5239	11	.5427	12
158 .	.5713	14	.5804	15	.5978	16	.5989	17	.6113	18	.6187	19
159 .	.6345	21	.6412	22	.6459	23	.6547	24	.6611	25	.6644	26
160 .	.6739	28	.6896	29	.6943	30	.6987	31	.7031	32	.7078	33
161 .	.7142	35	.7229	36	.7236	37	.7337	38	.7381	39	.7431	40
162 .	.7515	42	.7552	43	.7596	44	.7623	45	.7653	46	.7697	47
163 .	.7767	49	.7814	50	.7865	51	.7874	52	.7912	53	.7966	54
164 .	.8067	56	.8117	57	.8141	58	.8181	59	.8194	61	1.1111	61 *
165 .	21	3	1.11	1	1	35	4					
166 .	WU	3	7	40	C	5						
167 .	0.	0	.3207	1	.4620	2	.5655	3	.6442	4	.7011	5
168 .	.7922	7	.8178	8	.8435	9	.8643	11	.8795	11	.8939	12
169 .	.9023	14	.9042	15	.9118	16	.9146	17	.9203	18	.9231	19
170 .	.9284	21	.9326	22	.9336	23	.9355	24	.9364	25	.9383	26
171 .	.9421	28	.9440	29	.9478	30	.9478	31	.9478	32	.9488	33
172 .	.9517	35	.9517	36	.9516	37	.9535	38	.9545	39	.9545	40
173 .	.9564	42	.9583	43	.9592	44	.9592	45	.9592	46	.9602	47
174 .	.9602	49	.9602	50	.9602	51	.9621	52	.9639	53	.9639	54
175 .	.9639	56	.9649	57	.9649	58	.9649	59	.9649	60	1.0000	61 *
176 .	22	2	1.	1	181	1	4					
177 .	WU	11	6	33	9	12	41	C	M	F	43	11
178 .	0.	50	1.0000	61 *								
179 .	23	3	1.	1	181	1	4					
180 .	WU	11	6	33	9	12	41	C	M	F	43	11
181 .	.0113	1	.0137	1	.0183	2	.0171	3	.0233	4	.0311	5
182 .	.0413	7	.0543	8	.0639	9	.0693	11	.0773	11	.0843	12
183 .	.0952	14	.1032	15	.1092	16	.1146	17	.1172	18	.1222	19
184 .	.1299	21	.1349	22	.1405	23	.1449	24	.1512	25	.1562	26
185 .	.1645	28	.1732	29	.1818	30	.1911	31	.1951	32	.2011	33
186 .	.2041	35	.2151	36	.2241	37	.2281	38	.2321	39	.2369	40
187 .	.2444	42	.2504	43	.2554	44	.2611	45	.2647	46	.2707	47
188 .	.2854	49	.2910	50	.2944	51	.3070	52	.3107	53	.3207	54
189 .	.3317	56	.3401	57	.3473	58	.3543	59	.3606	61	1.1111	61 *
190 .	24	3	1.11	1	1	72	2					
191 .	WU	6	13	9	11	13	C	8	5			
192 .	0.	0	.0514	1	.1137	2	.1745	3	.2359	4	.2225	5
193 .	.2544	7	.2686	8	.2744	9	.2843	10	.2902	11	.3010	12
194 .	.3088	14	.3137	15	.3176	16	.3235	17	.3275	18	.3333	19
195 .	.3412	21	.3432	22	.3441	23	.3451	24	.3461	25	.3491	26
196 .	.3588	28	.3618	29	.3676	30	.3706	31	.3745	32	.3775	33
197 .	.3853	35	.3892	36	.3912	37	.3961	38	.4020	39	.4049	40
198 .	.4098	42	.4167	43	.4216	44	.4255	45	.4275	46	.4314	47
199 .	.4373	49	.4412	50	.4451	51	.4521	52	.4578	53	.4657	54
200 .	.4755	56	.4794	57	.4843	58	.4902	59	.4941	60	1.0000	61 *
201 .	25	2	.51	1	351	1	4					
202 .	WU	9	6	33	9	41	C	M	F	43	11	13
203 .	0.	61	1.1111	61 *								
204 .	26	3	1.11	1	721	6	2					
205 .	WU	6	33	9	29	C	M	F	11	8	5	
206 .	0.	0	.0701	1	.1213	2	.1731	3	.2260	4	.2741	5
207 .	.3464	7	.3732	8	.3995	9	.4233	11	.4451	11	.4682	12
208 .												

213.	.5176	14	.5331	15	.5629	16	.5826	17	.6028	18	.6235	19	.6399	20
214.	.6551	21	.6692	22	.6818	23	.6946	24	.7053	25	.7169	26	.7282	27
215.	.7379	28	.7473	29	.7564	30	.7655	31	.7730	32	.7799	33	.7857	34
216.	.7931	35	.7988	36	.8044	37	.8110	38	.8168	39	.8229	40	.8284	41
217.	.8334	42	.8376	43	.8430	44	.8469	45	.8510	46	.8561	47	.8607	48
218.	.8651	49	.8683	50	.8718	51	.8761	52	.8805	53	.8844	54	.8893	55
219.	.8925	56	.8969	57	.9015	58	.9048	59	.9084	60	1.0000	61	*	
220.	27	1	0.											
221.	40	13	6	33	9	14	27	41	C	M	F	43	11	10
222.														
223.														
224.	1.	60	1.0000	61	*									
225.	28	1	0.											
226.	40	13	6	33	9	14	27	41	C	M	F	43	11	10
227.														
228.														
229.	1.	60	1.0000	61	*									
230.	28	1	0.											
231.	40	13	6	33	9	14	27	41	C	M	F	43	11	10
232.														
233.	1.	0	.0027	1	.0022	2	.0047	3	.0072	4	.0090	5	.0110	6
234.	.0134	7	.0171	8	.0211	9	.0247	10	.0268	11	.0306	12	.0337	13
235.	.0345	14	.0389	15	.0416	16	.0452	17	.0499	18	.0535	19	.0562	20
236.	.0592	21	.0621	22	.0650	23	.0693	24	.0718	25	.0765	26	.0783	27
237.	.0825	28	.0882	29	.0918	30	.0954	31	.0994	32	.1033	33	.1071	34
238.	.1111	35	.1176	36	.1156	37	.1199	38	.1235	39	.1271	40	.1339	41
239.	.1379	42	.1431	43	.1474	44	.1515	45	.1593	46	.1631	47	.1690	48
240.	.1735	49	.1780	50	.1829	51	.1901	52	.1951	53	.2016	54	.2081	55
241.	.2144	56	.2205	57	.2254	58	.2315	59	.2355	60	1.0000	61	*	
242.	29	1	0.											
243.	40	13	6	33	9	14	27	41	C	M	F	43	11	10
244.														
245.	1.	60	1.0000	61	*									
246.	30	2	0.											
247.	40	14	6	33	9	14	27	41	C	M	F	43	11	10
248.														
249.	1.	0	.0446	1	.0856	2	.1371	3	.1745	4	.2054	5	.2231	6
250.	.2384	7	.2421	8	.2474	9	.2539	10	.2598	11	.2638	12	.2690	13
251.	.2736	14	.2759	15	.2808	16	.2861	17	.2874	18	.2894	19	.2920	20
252.	.2927	21	.2940	22	.2966	23	.2972	24	.2999	25	.3005	26	.3012	27
253.	.3031	28	.3045	29	.3044	30	.3104	31	.3117	32	.3136	33	.3182	34
254.	.3212	35	.3215	36	.3241	37	.3294	38	.3301	39	.3320	40	.3327	41
255.	.3332	42	.3332	43	.3434	44	.3451	45	.3504	46	.3543	47	.3589	48
256.	.3609	49	.3622	50	.3642	51	.3675	52	.3734	53	.3766	54	.3786	55
257.	.3819	56	.3845	57	.3871	58	.3924	59	.3950	60	1.0000	61	*	
258.	31	1	0.											
259.	40	13	6	33	9	12	41	C	M	F	43	11	13	5
260.	1.	20	.0015	21	.0274	22	.0531	23	.0772	24	.0974	25	.1185	26
261.	.1375	27	.1541	28	.1735	29	.1907	30	.2057	31	.2254	32	.2399	33
262.	.2551	34	.2701	35	.2822	36	.2951	37	.3085	38	.3195	39	.3316	40
263.	.3410	41	.3530	42	.3639	43	.3738	44	.3850	45	.3917	46	.4000	47
264.	.4074	48	.4171	49	.4238	50	.4325	51	.4415	52	.4510	53	.4571	54
265.	.4627	55	.4708	56	.4730	57	.4866	58	.4938	59	.4987	60	1.0000	61
266.														
267.	32	3	1.00											
268.	40	6	33	9	29	C	M	F	11	13	5			
269.	1.	0	.0856	1	.1702	2	.2455	3	.3214	4	.3905	5	.4556	6
270.	.5089	7	.5549	8	.5956	9	.6324	10	.6626	11	.6954	12	.7312	13
271.	.7740	14	.8138	15	.8457	16	.8823	17	.9149	18	.9454	19	.9740	20
272.	1.0000	21	*											
273.	33	2	0.											

273 .	WU	11	6	13	9	27	28	41	C	M	F	11	13	9	5	6		
274 .	1.	1	.3456	1	.1823	2	.2525	3	.2971	4	.3276	5	.3538	6				
275 .		.3672	7	.3823	8	.3935	9	.4032	10	.4067	11	.4145	12	.4199	13			
276 .		.4249	14	.4313	15	.4357	16	.4391	17	.4421	18	.4455	19	.4486	20			
277 .		.4513	21	.4545	22	.4579	23	.4614	24	.4634	25	.4655	26	.4676	27			
278 .		.4695	28	.4713	29	.4734	31	.4752	31	.4778	32	.4803	33	.4827	34			
279 .		.4851	35	.4867	36	.4884	37	.4905	38	.4923	39	.4943	40	.4963	41			
280 .		.4989	42	.5024	43	.5052	44	.5081	45	.5132	46	.5138	47	.5125	48			
281 .		.5143	49	.5188	50	.5144	51	.5222	52	.5244	53	.5271	54	.5299	55			
282 .		.5323	56	.5353	57	.5381	58	.5414	59	.5442	61	1.1111	61	*				
283 .	34	3	1.11	1	1	72	3											
284 .	WU	6	33	44	45	8	C	34	5									
285 .	1.	1	.3441	1	.1049	2	.1609	3	.1498	4	.2517	5	.2657	6				
286 .		.2727	7	.2797	8	.3117	9	.3177	11	.3147	11	.3237	12	.3497	13			
287 .		.3636	14	.3736	15	.3846	16	.3916	17	.3916	18	.4126	19	.4126	20			
288 .		.4126	21	.4196	22	.4256	23	.4266	24	.4416	25	.4476	26	.4476	27			
289 .		.4545	28	.4545	29	.4755	31	.4755	31	.4755	32	.4825	33	.4825	34			
290 .		.4825	35	.4836	36	.4955	37	.5135	38	.5135	39	.5245	40	.5315	41			
291 .		.5315	42	.5315	43	.5345	44	.5455	45	.5455	46	.5534	47	.5534	48			
292 .		.5664	49	.5664	50	.5734	51	.5734	52	.5734	53	.5734	54	.5804	55			
293 .		.6114	56	.6184	57	.6154	58	.6154	59	.6154	61	1.1111	61	*				
294 .	35	3	1.11	1	1	72	4											
295 .	WU	6	33	44	45	8	C	34	5									
296 .	1.	1	.3919	1	.1856	2	.2632	3	.3277	4	.3749	5	.4124	6				
297 .		.4441	7	.4644	8	.4855	9	.5123	11	.5164	11	.5238	12	.5375	13			
298 .		.5465	14	.5541	15	.5645	16	.5712	17	.5773	18	.5824	19	.5883	20			
299 .		.5927	21	.5973	22	.6033	23	.6074	24	.6113	25	.6162	26	.6210	27			
300 .		.6255	28	.6311	29	.6353	31	.6388	31	.6439	32	.6472	33	.6495	34			
301 .		.6536	35	.6533	36	.6616	37	.6651	38	.6689	39	.6723	41	.6756	41			
302 .		.6814	42	.6851	43	.6911	44	.6939	45	.6983	46	.7119	47	.7155	48			
303 .		.7148	49	.7142	50	.7193	51	.7225	52	.7262	53	.7299	54	.7325	55			
304 .		.7361	56	.7412	57	.7448	58	.7499	59	.7539	61	1.1111	61	*				
305 .	36	1	0.	3	180	1	4											
306 .	WU	13	6	17	16	41	C	M	F	43	11	31	13	33	31	9	5	6
307 .	1.	1	.3069	6	.0247	7	.0410	8	.0559	9	.1685	11	.1824	11				
308 .		.1392	12	.1167	13	.1352	14	.1561	15	.1733	16	.1904	17	.2073	18			
309 .		.2237	19	.2438	20	.2548	21	.2753	22	.2931	23	.3185	24	.3231	25			
310 .		.3379	26	.3513	27	.3616	28	.3732	29	.3855	31	.3946	31	.4059	32			
311 .		.4140	33	.4264	34	.4356	35	.4452	36	.4543	37	.4634	38	.4719	39			
312 .		.4816	40	.4891	41	.4957	42	.5134	43	.5114	44	.5180	45	.5237	46			
313 .		.5310	47	.5384	48	.5441	49	.5511	51	.5561	51	.5632	52	.5716	53			
314 .		.5778	54	.5826	55	.5899	56	.5955	57	.6122	58	.6186	59	.6137	61			
315 .	1.1111	61	*															
316 .	37	1	0.	5	160	3	4											
317 .	WU	10	6	17	41	C	M	F	43	11	30	33	9	5	6			
318 .	1.	1	.1634	1	.3538	2	.4977	3	.6798	4	.8815	5	1.1111	6				
319 .	*																	
320 .	38	1	0.	5	180	1	4											
321 .	WU	13	6	17	15	14	41	C	M	F	33	42	11	31	13	9	5	6
322 .	1.	1	.3611	1	.1117	2	.1445	3	.1942	4	.2511	5	.2833	6				
323 .		.3233	7	.3519	8	.3717	9	.3989	10	.4289	11	.4533	12	.4907	13			
324 .		.5215	14	.5467	15	.5743	16	.5987	17	.6231	18	.6377	19	.6523	20			
325 .		.6694	21	.6817	22	.6921	23	.6986	24	.7143	25	.7173	26	.7262	27			

324 .	.7335	24	.7425	29	.7539	33	.7620	31	.7669	32	.7734	33	.7782	34
325 .	.7823	35	.7846	36	.7920	37	.7937	38	.8010	39	.8050	40	.8107	41
330 .	.8156	42	.8213	43	.8236	44	.8335	45	.8343	46	.8367	47	.8408	48
331 .	.8424	49	.8457	50	.8465	51	.8465	52	.8489	53	.8546	54	.8562	55
332 .	.8547	56	.8547	57	.8611	58	.8654	59	.8692	60	1.0000	61	*	
333 .	59	1	0.	0	180	1	4							
334 .	40	11	6	41	0	30	33	24	44	43	11	13	9	6
335 .	0.	1	.0318	2	.0657	3	.1037	4	.1348	5	.1544	6	.1943	7
336 .	.2144	8	.2346	9	.2492	10	.2646	11	.2770	12	.3134	13	.3274	14
337 .	.3524	15	.3674	16	.3847	17	.4014	18	.4194	19	.4340	20	.4480	21
338 .	.4543	22	.4714	23	.4816	24	.4915	25	.5016	26	.5104	27	.5187	28
339 .	.5231	29	.5335	30	.5513	31	.5624	32	.5697	33	.5742	34	.5820	35
340 .	.5897	36	.5948	37	.6008	38	.6088	39	.6140	40	.6199	41	.6248	42
341 .	.6294	43	.6342	44	.6398	45	.6437	46	.6477	47	.6521	48	.6559	49
342 .	.6599	50	.6624	51	.6662	52	.6722	53	.6779	54	.6821	55	.6870	56
343 .	.6923	57	.6972	58	.7023	59	.7070	60	1.0000	61	*			
344 .	40	1	0.	0	360	3	4							
345 .	40	9	6	41	0	33	33	44	11	13	9	5		
346 .	0.	0	.8197	1	1.0000	2	*							
347 .	41	3	1.00	0	1440	12	2							
348 .	40	4	19	0	4	11	4	5						
349 .	0.	0	.0510	1	.1158	2	.1734	3	.2347	4	.2770	5	.3208	6
350 .	.3540	7	.3856	8	.4031	9	.4263	10	.4401	11	.4528	12	.4690	13
351 .	.4832	14	.4974	15	.5057	16	.5154	17	.5259	18	.5350	19	.5439	20
352 .	.5454	21	.5534	22	.5610	23	.5674	24	.5717	25	.5753	26	.5800	27
353 .	.5847	28	.5911	29	.5982	30	.6029	31	.6112	32	.6140	33	.6175	34
354 .	.6239	35	.6286	36	.6322	37	.6385	38	.6452	39	.6499	40	.6535	41
355 .	.6594	42	.6646	43	.6701	44	.6744	45	.6792	46	.6827	47	.6891	48
356 .	.6962	49	.7017	50	.7060	51	.7100	52	.7157	53	.7222	54	.7266	55
357 .	.7305	56	.7365	57	.7412	58	.7463	59	.7479	60	1.0000	61	*	
358 .	42	3	1.00	0	1440	12	2							
359 .	40	3	19	0	4	11	5							
360 .	.0015	0	.0720	1	.1718	2	.2701	3	.3416	4	.4115	5	.4673	6
361 .	.5160	7	.5585	8	.5854	9	.6133	10	.6376	11	.6543	12	.6690	13
362 .	.6903	14	.6994	15	.7101	16	.7192	17	.7278	18	.7369	19	.7435	20
363 .	.7506	21	.7567	22	.7638	23	.7699	24	.7765	25	.7841	26	.7856	27
364 .	.7907	28	.7922	29	.7952	30	.7998	31	.8018	32	.8044	33	.8064	34
365 .	.8094	35	.8135	36	.8170	37	.8201	38	.8241	39	.8282	40	.8317	41
366 .	.8353	42	.8409	43	.8454	44	.8479	45	.8510	46	.8545	47	.8576	48
367 .	.8604	49	.8632	50	.8657	51	.8687	52	.8713	53	.8743	54	.8779	55
368 .	.8809	56	.8849	57	.8870	58	.8975	59	.8890	60	1.0000	61	*	
369 .	43	1	.50	0	360	3	4							
370 .	40	8	6	41	0	44	43	11	13	9	5			
371 .	0.	0	.0159	1	.0745	2	.0498	3	.0607	4	.0748	5	.0891	6
372 .	.1455	7	.2045	8	.2541	9	.2961	10	.3288	11	.3670	12	.3985	13
373 .	.4242	14	.4613	15	.4832	16	.5141	17	.5336	18	.5544	19	.5719	20
374 .	.5931	21	.6132	22	.6342	23	.6515	24	.6640	25	.6748	26	.6847	27
375 .	.6961	28	.7093	29	.7159	30	.7258	31	.7360	32	.7420	33	.7492	34
376 .	.7556	35	.7625	36	.7721	37	.7772	38	.7829	39	.7904	40	.7951	41
377 .	.8008	42	.8081	43	.8132	44	.8168	45	.8222	46	.8261	47	.8315	48
378 .	.8363	49	.8396	50	.8423	51	.8446	52	.8508	53	.8532	54	.8565	55
379 .	.8616	56	.8637	57	.8667	58	.8703	59	.8730	60	1.0000	61	*	
380 .	44	1	0.	0	1440	12	4							
381 .	40	7	6	33	41	0	4	13	30	9	5			
382 .	.0071	0	.0071	1	.0071	2	.0355	3	.0496	4	.0638	5	.0851	6

381.	.3851	7	.1354	8	.1277	9	.1419	10	.1531	11	.1773	12	.1915	13
384.	.1346	14	.2270	15	.2770	16	.2361	17	.2343	18	.2411	19	.2482	20
385.	.2524	21	.2746	22	.2766	23	.2837	24	.2918	25	.2979	26	.3121	27
386.	.3333	28	.3475	29	.3475	30	.3546	31	.3546	32	.3546	33	.3546	34
387.	.3648	35	.3648	36	.3759	37	.3911	38	.4043	39	.4113	40	.4681	41
388.	.4641	42	.4965	43	.5035	44	.5106	45	.5248	46	.5248	47	.5333	48
389.	.5461	49	.5532	50	.5532	51	.5532	52	.5532	53	.5674	54	.5487	55
390.	.5487	56	.5487	57	.5039	58	.5039	59	.6312	60	1.0000	61		
391.	.45	2	0.	0	1.40	12	2							
392.	40	13	6	14	41	C M F	30	31	11	13	9	5	6	
393.	1.	0	.1148	1	.1987	2	.2513	3	.2781	4	.3122	5	.3212	6
394.	.3344	7	.3545	8	.3714	9	.3875	10	.3994	11	.4133	12	.4187	13
395.	.4239	14	.4355	15	.4465	16	.4533	17	.4676	18	.4682	19	.4746	20
396.	.4741	21	.4868	22	.4933	23	.4932	24	.4984	25	.5023	26	.5051	27
397.	.5068	28	.5100	29	.5142	30	.5181	31	.5226	32	.5272	33	.5311	34
398.	.5356	35	.5412	36	.5423	37	.5455	38	.5483	39	.5521	40	.5550	41
399.	.5588	42	.5630	43	.5676	44	.5717	45	.5753	46	.5774	47	.5813	48
400.	.5855	49	.5895	50	.5911	51	.5956	52	.5995	53	.6055	54	.6093	55
401.	.6164	56	.6230	57	.6279	58	.6353	59	.6409	60	1.0000	61		
402.	.45	3	1.33	0	1	0	2							
403.	40	0	.33	29	C	18	11	9	5					
404.	.0000	0	.2339	1	.4215	2	.5520	3	.6360	4	.6985	5	.7407	6
405.	.7737	7	.8103	8	.8227	9	.8354	10	.8485	11	.8561	12	.8647	13
406.	.8747	14	.8848	15	.8935	16	.8943	17	.8975	18	.9012	19	.9051	20
407.	.9143	21	.9128	22	.9139	23	.9165	24	.9191	25	.9216	26	.9241	27
408.	.9259	28	.9265	29	.9279	30	.9292	31	.9314	32	.9324	33	.9333	34
409.	.9335	35	.9344	36	.9359	37	.9383	38	.9392	39	.9411	40	.9421	41
410.	.9432	42	.9448	43	.9443	44	.9477	45	.9444	46	.9497	47	.9514	48
411.	.9514	49	.9521	50	.9531	51	.9547	52	.9552	53	.9556	54	.9561	55
412.	.9567	56	.9574	57	.9578	58	.9589	59	.9591	60	1.0000	61		
413.	.47	1	0.	0	35	3	4							
414.	40	4	6	33	41	C M F	31	11	13	30	5			
415.	1.	0	.3373	1	.3113	2	.3215	3	.3274	4	.3353	5	.3387	6
416.	.3425	7	.3457	8	.3490	9	.3533	10	.3549	11	.3562	12	.3584	13
417.	.3646	14	.3667	15	.3699	16	.3732	17	.3737	18	.3748	19	.3754	20
418.	.3783	21	.3812	22	.3855	23	.3893	24	.3909	25	.3931	26	.3953	27
419.	.3979	28	.3984	29	.3991	30	.3993	31	.3996	32	.3997	33	.3998	34
420.	.3999	35	.4000	36	.4000	37	.4000	38	.4000	39	.4000	40	.4000	41
421.	.4000	42	.4000	43	.4000	44	.4000	45	.4000	46	.4000	47	.4000	48
422.	.4000	49	.4000	50	.4000	51	.4000	52	.4000	53	.4000	54	.4000	55
423.	.4000	56	.4000	57	.4000	58	.4000	59	.4000	60	1.0000	61		
424.	.48	3	1.33	0	0	24	2							
425.	40	4	33	31	9	C	5							
426.	.0001	0	.0739	1	.1938	2	.3127	3	.4263	4	.5181	5	.5968	6
427.	.6617	7	.7169	8	.7550	9	.7827	10	.8039	11	.8211	12	.8364	13
428.	.8444	14	.8593	15	.8685	16	.8772	17	.8842	18	.8880	19	.8915	20
429.	.8962	21	.9037	22	.9037	23	.9068	24	.9094	25	.9134	26	.9162	27
430.	.9183	28	.9202	29	.9226	30	.9238	31	.9251	32	.9263	33	.9283	34
431.	.9315	35	.9319	36	.9336	37	.9345	38	.9353	39	.9371	40	.9387	41
432.	.9400	42	.9404	43	.9420	44	.9435	45	.9443	46	.9448	47	.9453	48
433.	.9461	49	.9462	50	.9465	51	.9474	52	.9483	53	.9488	54	.9496	55
434.	.9510	56	.9524	57	.9534	58	.9541	59	.9546	60	1.0000	61		
435.	.47	1	0.	0	144	12	4							
436.	40	5	6	33	41	C M F	9	5						
437.	1.	0	.1130	1	.1745	2	.2350	3	.2286	4	.2432	5	.2593	6

438.	.2742	7	.2821	8	.2900	9	.2967	10	.3059	11	.3131	12	.3181	13
439.	.3249	14	.3294	15	.3316	16	.3356	17	.3373	18	.3401	19	.3407	20
440.	.3418	21	.3446	22	.3457	23	.3481	24	.3514	25	.3519	26	.3531	27
441.	.3542	28	.3564	29	.3564	30	.3573	31	.3581	32	.3587	33	.3592	34
442.	.3604	35	.3615	36	.3620	37	.3632	38	.3649	39	.3660	40	.3671	41
443.	.3682	42	.3694	43	.3727	44	.3756	45	.3767	46	.3801	47	.3829	48
444.	.3841	49	.3863	50	.3891	51	.3908	52	.3936	53	.3958	54	.3981	55
445.	.4009	56	.4025	57	.4054	58	.4082	59	.4099	60	1.0000	61		
446.	50	1	0	0	360	4	4							
447.	WU	4	5	33	41	0	4	11	3	8	38	5		
448.	0.	0	.0029	1	.0144	2	.0233	3	.0317	4	.0354	5	.0374	6
449.	.0441	7	.0538	8	.0575	9	.0551	10	.0670	11	.0757	12	.0805	13
450.	.0862	14	.0881	15	.0920	16	.0948	17	.0958	18	.0967	19	.1025	20
451.	.1044	21	.1044	22	.1092	23	.1111	24	.1130	25	.1140	26	.1149	27
452.	.1159	28	.1178	29	.1216	30	.1236	31	.1255	32	.1255	33	.1303	34
453.	.1351	35	.1389	36	.1399	37	.1437	38	.1456	39	.1504	40	.1500	41
454.	.1557	42	.1545	43	.1715	44	.1743	45	.1810	46	.1849	47	.1849	48
455.	.1906	49	.1944	50	.1973	51	.1983	52	.1992	53	.2031	54	.2040	55
456.	.2107	56	.2155	57	.2222	58	.2280	59	.2318	60	1.0000	61		
457.	51	3	1.00	0	0	12	3							
458.	WU	5	33	31	9	0	38	5						
459.	0.	0	.0046	1	.0138	2	.0138	3	.0138	4	.0181	5	.0193	6
460.	.0183	7	.0229	8	.0275	9	.0275	10	.0275	11	.0275	12	.0275	13
461.	.0275	14	.0275	15	.0275	16	.0275	17	.0275	18	.0275	19	.0275	20
462.	.0275	21	.0275	22	.0275	23	.0275	24	.0275	25	.0275	26	.0275	27
463.	.0275	28	.0275	29	.0275	30	.0275	31	.0275	32	.0275	33	.0275	34
464.	.0275	35	.0275	36	.0275	37	.0275	38	.0275	39	.0275	40	.0275	41
465.	.0275	42	.0321	43	.0321	44	.0321	45	.0321	46	.0321	47	.0321	48
466.	.0321	49	.0321	50	.0321	51	.0321	52	.0367	53	.0367	54	.0367	55
467.	.0367	56	.0367	57	.0367	58	.0367	59	.0367	60	1.0000	61		
468.	52	5	1.00	0	0	12	3							
469.	WU	5	31	3	0	8	38	5						
470.	0.	0	.1614	1	.2787	2	.3770	3	.4378	4	.4926	5	.5314	6
471.	.5615	7	.5782	8	.5983	9	.6103	10	.6233	11	.6270	12	.6350	13
472.	.6430	14	.6511	15	.6584	16	.6644	17	.6725	18	.6765	19	.6838	20
473.	.6885	21	.6972	22	.6994	23	.7032	24	.7079	25	.7146	26	.7213	27
474.	.7259	28	.7313	29	.7380	30	.7420	31	.7517	32	.7560	33	.7580	34
475.	.7634	35	.7680	36	.7714	37	.7754	38	.7794	39	.7848	40	.7894	41
476.	.7948	42	.7981	43	.8028	44	.8082	45	.8138	46	.8184	47	.8158	48
477.	.8222	49	.8242	50	.8275	51	.8329	52	.8362	53	.8369	54	.8402	55
478.	.8422	56	.8444	57	.8483	58	.8503	59	.8556	60	1.0000	61		
479.	53	3	1.00	0	0	12	3							
480.	WU	5	11	4	0	8	38	5						
481.	0.	0	.0946	1	.2424	2	.3772	3	.4732	4	.5584	5	.6188	6
482.	.6681	7	.7082	8	.7395	9	.7641	10	.7834	11	.8002	12	.8133	13
483.	.8252	14	.8349	15	.8439	16	.8517	17	.8581	18	.8640	19	.8705	20
484.	.8741	21	.8778	22	.8821	23	.8856	24	.8882	25	.8903	26	.8930	27
485.	.8950	28	.8992	29	.9007	30	.9033	31	.9056	32	.9072	33	.9093	34
486.	.9120	35	.9137	36	.9160	37	.9181	38	.9193	39	.9206	40	.9224	41
487.	.9245	42	.9258	43	.9272	44	.9285	45	.9302	46	.9313	47	.9331	48
488.	.9345	49	.9344	50	.9379	51	.9391	52	.9404	53	.9418	54	.9439	55
489.	.9448	56	.9447	57	.9482	58	.9493	59	.9501	60	1.0000	61		
490.	54	5	1.00	0	0	24	2							
491.	WU	5	2	31	9	0	8	5						
492.	0.	0	.1077	1	.2038	2	.3020	3	.3933	4	.4736	5	.5523	6

433 .	.6072	7	.6589	8	.6996	9	.7323	10	.7514	11	.7899	12	.8141	13
434 .	.8305	14	.8464	15	.8517	16	.8733	17	.8833	18	.8928	19	.9007	20
435 .	.9171	21	.9124	22	.9151	23	.9137	24	.9234	25	.9293	26	.9324	27
436 .	.9366	28	.9343	29	.9403	30	.9424	31	.9446	32	.9456	33	.9467	34
437 .	.9438	35	.9519	36	.9551	37	.9562	38	.9567	39	.9572	40	.9592	41
438 .	.9539	42	.9549	43	.9619	44	.9619	45	.9630	46	.9636	47	.9646	48
439 .	.9552	49	.9657	50	.9667	51	.9683	52	.9694	53	.9699	54	.9713	55
501 .	.9711	56	.9721	57	.9721	58	.9731	59	.9741	60	1.0000	61	*	
502 .	55	1	3		24	2	4							
503 .	WU	4	5	34	33	43	C	M	F	9	8	38	5	
504 .	0.	0	.0979	1	.1830	2	.2543	3	.3267	4	.3881	5	.4409	6
505 .	.4831	7	.5049	8	.5246	9	.5457	10	.5597	11	.5766	12	.5853	13
506 .	.5359	14	.6142	15	.6192	16	.6137	17	.6173	18	.6223	19	.6264	20
507 .	.6309	21	.6355	22	.6413	23	.6457	24	.6497	25	.6548	26	.6588	27
508 .	.6635	28	.6718	29	.6733	30	.6773	31	.6806	32	.6853	33	.6904	34
509 .	.6941	35	.6971	36	.7021	37	.7046	38	.7064	39	.7093	40	.7133	41
510 .	.7152	42	.7186	43	.7217	44	.7251	45	.7286	46	.7331	47	.7373	48
511 .	.7344	49	.7370	50	.7395	51	.7429	52	.7466	53	.7468	54	.7505	55
512 .	.7541	56	.7552	57	.7570	58	.7595	59	.7617	60	1.0000	61	*	
513 .	56	1	1.00	0	720	5	4							
514 .	WU	5	33	31	3	C	M	F	8	5				
515 .	0.	0	.3019	1	.5430	2	.5524	3	.7304	4	.7435	5	.8228	6
516 .	.9548	7	.9754	8	.9820	9	.9853	10	.9849	11	.9823	12	.9827	13
517 .	.9354	14	.9401	15	.9442	16	.9474	17	.9506	18	.9523	19	.9542	20
518 .	.9558	21	.9558	22	.9588	23	.9611	24	.9618	25	.9619	26	.9631	27
519 .	.9643	28	.9647	29	.9654	30	.9664	31	.9672	32	.9681	33	.9685	34
520 .	.9695	35	.9701	36	.9709	37	.9713	38	.9727	39	.9734	40	.9743	41
521 .	.9748	42	.9753	43	.9756	44	.9760	45	.9763	46	.9766	47	.9769	48
522 .	.9774	49	.9777	50	.9781	51	.9781	52	.9784	53	.9787	54	.9789	55
523 .	.9797	56	.9810	57	.9802	58	.9803	59	.9806	60	1.0000	61	*	
524 .	57	3	1.00	0	144	12	2							
525 .	WU	6	2	33	31	3	4	C	M	F	5			
526 .	0.	0	.3145	1	.5851	2	.7321	3	.8188	4	.8625	5	.8959	6
527 .	.9172	7	.9346	8	.9475	9	.9578	10	.9626	11	.9685	12	.9726	13
528 .	.9758	14	.9758	15	.9820	16	.9831	17	.9839	18	.9847	19	.9847	20
529 .	.9857	21	.9857	22	.9856	23	.9868	24	.9868	25	.9874	26	.9879	27
530 .	.9887	28	.9887	29	.9892	30	.9893	31	.9891	32	.9894	33	.9899	34
531 .	.9925	35	.9925	36	.9933	37	.9933	38	.9934	39	.9941	40	.9949	41
532 .	.9957	42	.9952	43	.9952	44	.9955	45	.9955	46	.9955	47	.9955	48
533 .	.9965	49	.9965	50	.9965	51	.9965	52	.9965	53	.9965	54	.9965	55
534 .	.9968	56	.9968	57	.9968	58	.9968	59	.9973	60	1.0000	61	*	
535 .	58	3	1.00	0	72	2								
536 .	WU	4	2	31	3	C	5							
537 .	0.	0	.1860	1	.3448	2	.4567	3	.5364	4	.5938	5	.6558	6
538 .	.7194	7	.7575	8	.7783	9	.8093	10	.8254	11	.8372	12	.8481	13
539 .	.8543	14	.8549	15	.8536	16	.8744	17	.8761	18	.8822	19	.8853	20
540 .	.8853	21	.8868	22	.8899	23	.8946	24	.8961	25	.9008	26	.9008	27
541 .	.9039	28	.9054	29	.9070	30	.9116	31	.9163	32	.9178	33	.9219	34
542 .	.9209	35	.9240	36	.9271	37	.9287	38	.9313	39	.9333	40	.9349	41
543 .	.9381	42	.9381	43	.9381	44	.9381	45	.9381	46	.9395	47	.9411	48
544 .	.9442	49	.9442	50	.9473	51	.9488	52	.9488	53	.9504	54	.9535	55
545 .	.9535	56	.9535	57	.9550	58	.9566	59	.9566	60	1.0000	61	*	
546 .	59	3	1.00	0	72	2								
547 .	WU	6	2	33	31	3	4	C	5					
548 .	0.	0	.1519	1	.2818	2	.3749	3	.4355	4	.4881	5	.5268	6

543 .	.6658	7	.6911	8	.6117	9	.6245	10	.6471	11	.6532	12	.6642	13
544 .	.6763	14	.6839	15	.6927	16	.7132	17	.7117	18	.7123	19	.7155	20
545 .	.7141	21	.7243	22	.7271	23	.7247	24	.7343	25	.7344	26	.7411	27
546 .	.7446	28	.7471	29	.7448	30	.7577	31	.7594	32	.7521	33	.7534	34
547 .	.7612	35	.7726	36	.7779	37	.7814	38	.7841	39	.7844	40	.7858	41
548 .	.7927	42	.7946	43	.7949	44	.8042	45	.8060	46	.8164	47	.8174	48
549 .	.8147	49	.8181	50	.8219	51	.8235	52	.8271	53	.8326	54	.8344	55
550 .	.8337	56	.8421	57	.8457	58	.8472	59	.8493	60	1.0000	61		
551 .	53	5	1.00	0	0	72	3							
552 .	WU	5	33	31	A	C	38	5						
553 .	.3054	0	.3457	1	.3478	2	.1194	3	.1651	4	.1344	5	.2166	6
554 .	.2243	7	.2631	8	.2728	9	.2434	10	.2363	11	.3156	12	.3133	13
555 .	.3197	14	.3267	15	.3326	16	.3431	17	.3466	18	.3513	19	.3550	20
556 .	.3565	21	.3724	22	.3816	23	.3893	24	.3933	25	.4152	26	.4169	27
557 .	.4227	28	.4239	29	.4321	30	.4356	31	.4450	32	.4504	33	.4555	34
558 .	.4672	35	.4719	36	.4778	37	.4871	38	.4918	39	.4977	40	.5135	41
559 .	.5194	42	.5141	43	.5139	44	.5246	45	.5293	46	.5346	47	.5445	48
560 .	.5447	49	.5504	50	.5539	51	.5562	52	.5562	53	.5539	54	.5621	55
561 .	.5717	56	.5749	57	.5831	58	.5855	59	.5944	60	1.0000	61		
562 .	51	3	1.00	1	0	24	2							
563 .	WU	3	31	A	C	5								
564 .	0.	0	.3379	1	.5553	2	.6800	3	.7542	4	.8041	5	.8416	6
565 .	.8658	7	.8864	8	.9115	9	.9141	10	.9227	11	.9311	12	.9371	13
566 .	.9420	14	.9467	15	.9498	16	.9527	17	.9552	18	.9571	19	.9594	20
567 .	.9618	21	.9631	22	.9639	23	.9647	24	.9667	25	.9676	26	.9683	27
568 .	.9692	28	.9698	29	.9712	30	.9725	31	.9731	32	.9734	33	.9742	34
569 .	.9744	35	.9748	36	.9751	37	.9756	38	.9762	39	.9765	40	.9768	41
570 .	.9773	42	.9778	43	.9784	44	.9787	45	.9791	46	.9793	47	.9797	48
571 .	.9811	49	.9816	50	.9811	51	.9816	52	.9821	53	.9821	54	.9827	55
572 .	.9828	56	.9834	57	.9834	58	.9838	59	.9839	60	1.0000	61		
573 .	57	5	1.00	0	0	24	3							
574 .	WU	5	33	31	A	C	38	5						
575 .	0.	0	.3340	1	.3326	2	.1574	3	.2311	4	.2362	5	.2723	6
576 .	.3374	7	.3414	8	.3747	9	.4353	10	.4277	11	.4372	12	.4554	13
577 .	.4641	14	.4819	15	.4914	16	.5011	17	.5095	18	.5181	19	.5238	20
578 .	.5362	21	.5457	22	.5554	23	.5617	24	.5649	25	.5734	26	.5831	27
579 .	.5844	28	.5936	29	.6021	30	.6106	31	.6149	32	.6277	33	.6383	34
580 .	.6449	35	.6536	36	.6631	37	.6810	38	.6893	39	.6894	40	.6979	41
581 .	.7132	42	.7117	43	.7255	44	.7331	45	.7372	46	.7479	47	.7521	48
582 .	.7574	49	.7670	50	.7723	51	.7777	52	.7798	53	.7841	54	.7914	55
583 .	.7935	56	.7979	57	.7989	58	.8021	59	.8095	60	1.0000	61		
584 .	53	5	1.00	1	0	24	2							
585 .	WU	3	31	A	C	5								
586 .	0.	0	.1308	1	.1667	2	.5699	3	.6950	4	.7757	5	.8296	6
587 .	.8689	7	.8943	8	.9174	9	.9310	10	.9426	11	.9535	12	.9611	13
588 .	.9678	14	.9732	15	.9757	16	.9814	17	.9824	18	.9852	19	.9871	20
589 .	.9889	21	.9912	22	.9911	23	.9922	24	.9925	25	.9931	26	.9934	27
590 .	.9934	28	.9945	29	.9946	30	.9950	31	.9953	32	.9956	33	.9959	34
591 .	.9962	35	.9965	36	.9966	37	.9967	38	.9969	39	.9971	40	.9972	41
592 .	.9974	42	.9975	43	.9977	44	.9977	45	.9977	46	.9977	47	.9977	48
593 .	.9978	49	.9978	50	.9978	51	.9979	52	.9979	53	.9979	54	.9979	55
594 .	.9979	56	.9980	57	.9981	58	.9981	59	.9981	60	1.0000	61		
595 .	54	5	1.00	1	0	24	2							
596 .	WU	3	31	A	C	5								
597 .	.3377	0	.3345	1	.3575	2	.1996	3	.1341	4	.1494	5	.1762	6

603 .	.1992	7	.2184	8	.2375	9	.2491	11	.2797	11	.3141	12	.3141	13
604 .	.3140	14	.3410	15	.3525	16	.3641	17	.3755	18	.3870	19	.3985	20
605 .	.4138	21	.4241	22	.4416	23	.4444	24	.4521	25	.4713	26	.4914	27
606 .	.4991	28	.5106	29	.5211	30	.5326	31	.5464	32	.5479	33	.5632	34
607 .	.5670	35	.5747	36	.5795	37	.5977	38	.6054	39	.6130	40	.6169	41
608 .	.6237	42	.6244	43	.6350	44	.6513	45	.6590	46	.6590	47	.6628	48
609 .	.6628	49	.6628	50	.6715	51	.6921	52	.6997	53	.6947	54	.6935	55
610 .	.7111	56	.7126	57	.7165	58	.7213	59	.7213	60	1.1111	61	*	
611 .	55	1	.25	5	181	2	4							
612 .	WU	7	5	17	31	43	C	M	F	45	8	5		
613 .	0.	0	.4374	1	.6501	2	.7532	3	.8124	4	.8341	5	.8492	6
614 .	.8597	7	.8688	8	.8793	9	.8974	11	.9135	11	.9125	12	.9146	13
615 .	.9216	14	.9231	15	.9275	16	.9326	17	.9321	18	.9336	19	.9336	20
616 .	.9336	21	.9336	22	.9336	23	.9367	24	.9397	25	.9397	26	.9412	27
617 .	.9427	28	.9427	29	.9442	30	.9472	31	.9472	32	.9487	33	.9487	34
618 .	.9487	35	.9487	36	.9487	37	.9487	38	.9487	39	.9487	40	.9487	41
619 .	.9512	42	.9517	43	.9517	44	.9532	45	.9548	46	.9548	47	.9578	48
620 .	.9578	49	.9583	50	.9593	51	.9593	52	.9593	53	.9593	54	.9618	55
621 .	.9618	56	.9623	57	.9623	58	.9623	59	.9623	60	1.0100	61	*	
622 .	56	1	.25	5	181	1	4							
623 .	WU	6	6	21	C	M	F	13	31	4	5			
624 .	0.	0	.4723	1	.7246	2	.8156	3	.8836	4	.9121	5	.9407	6
625 .	.9547	7	.9596	8	.9651	9	.9725	11	.9763	11	.9811	12	.9833	13
626 .	.9854	14	.9860	15	.9881	16	.9942	17	.9914	18	.9925	19	.9925	20
627 .	.9925	21	.9925	22	.9925	23	.9925	24	.9925	25	.9925	26	.9925	27
628 .	.9925	28	.9930	29	.9930	30	.9931	31	.9931	32	.9935	33	.9935	34
629 .	.9946	35	.9946	36	.9951	37	.9951	38	.9951	39	.9951	40	.9951	41
630 .	.9957	42	.9957	43	.9957	44	.9957	45	.9957	46	.9957	47	.9957	48
631 .	.9962	49	.9962	50	.9962	51	.9962	52	.9962	53	.9962	54	.9962	55
632 .	.9962	56	.9968	57	.9968	58	.9968	59	.9968	60	1.0111	61	*	
633 .	57	1	1.00	5	0	12	2							
634 .	WU	4	23	9	C	8	5							
635 .	0.	0	.1981	1	.4291	2	.6151	3	.6591	4	.7251	5	.7811	6
636 .	.7911	7	.7911	8	.8351	9	.8461	11	.8571	11	.8791	12	.9111	13
637 .	.9111	14	.9111	15	.9231	16	.9231	17	.9450	18	.9560	19	.9670	20
638 .	.9670	21	.9731	22	.9731	23	.9891	24	.9891	25	.9891	26	.9891	27
639 .	.9891	28	.9891	29	.9891	30	.9891	31	.9891	32	.9891	33	.9891	34
640 .	.9891	35	.9891	36	.9891	37	.9891	38	.9891	39	.9891	40	.9891	41
641 .	1.1111	42	*											
642 .	58	1	1.00	0	0	0	3							
643 .	WU	4	2	33	11	31	9	8	38	5				
644 .	0.	0	.2191	1	.3744	2	.4731	3	.5351	4	.5892	5	.6291	6
645 .	.6598	7	.6822	8	.6943	9	.7131	11	.7249	11	.7333	12	.7427	13
646 .	.7514	14	.7570	15	.7628	16	.7682	17	.7713	18	.7750	19	.7774	20
647 .	.7797	21	.7829	22	.7844	23	.7858	24	.7901	25	.7936	26	.7954	27
648 .	.7988	28	.8008	29	.8031	30	.8055	31	.8074	32	.8187	33	.8115	34
649 .	.8178	35	.8142	36	.8155	37	.8184	38	.8217	39	.8214	40	.8222	41
650 .	.8244	42	.8255	43	.8236	44	.8311	45	.8324	46	.8345	47	.8366	48
651 .	.8383	49	.8401	50	.8418	51	.8449	52	.8471	53	.8489	54	.8511	55
652 .	.8532	56	.8548	57	.8573	58	.8584	59	.8605	60	1.0000	61	*	
653 .	59	1	.21	3	241	2	4							
654 .	WU	4	6	13	31	32	1	C	M	F	8	38	5	
655 .	0.	0	.0034	1	.0045	2	.0154	3	.0208	4	.0273	5	.0338	6
656 .	.0417	7	.0522	8	.0576	9	.0677	10	.0760	11	.0845	12	.0914	13
657 .	.0993	14	.1071	15	.1156	16	.1262	17	.1361	18	.1479	19	.1596	20

652	.1772	21	.1878	22	.1974	13	.2077	24	.2177	25	.2260	26	.2344	27
653	.2577	28	.2778	29	.2943	30	.3105	31	.3277	32	.3445	33	.3521	34
654	.3677	35	.3894	36	.4077	37	.4264	38	.4415	39	.4522	40	.4529	41
655	.4657	42	.4773	43	.4857	44	.5113	45	.5217	46	.5345	47	.5439	48
656	.5524	49	.5755	50	.5879	51	.5979	52	.6125	53	.6253	54	.6365	55
657	.6477	56	.6503	57	.6713	58	.6823	59	.6939	60	1.1111	61		
658	71	2	1.00	0	361	3	3	3						
659	WU	5	11	12	2	C	M	F	A	34	5			
660	1.	0	.1112	1	.1139	2	.1135	3	.1139	4	.1343	5	.1448	6
661	.1555	7	.1831	8	.1011	9	.1173	10	.1350	11	.1525	12	.1633	13
662	.1745	14	.2222	15	.2458	16	.2722	17	.2944	18	.3137	19	.3314	20
663	.3495	21	.3668	22	.3837	23	.4115	24	.4234	25	.4374	26	.4553	27
664	.4723	28	.4914	29	.5123	30	.5355	31	.5546	32	.5733	33	.5936	34
665	.6231	35	.6444	36	.6650	37	.6836	38	.7004	39	.7152	40	.7278	41
666	.7414	42	.7549	43	.7684	44	.7784	45	.7891	46	.7973	47	.8050	48
667	.8142	49	.8207	50	.8268	51	.8321	52	.8385	53	.8434	54	.8492	55
668	.8551	56	.8593	57	.8639	58	.8689	59	.8736	60	1.1111	61		
669	71	1	1.00	0	243	2	4							
670	WU	5	33	41	45	3	C	M	F	A	5			
671	0.	0	.1022	1	.2539	2	.3345	3	.4332	4	.5430	5	.6377	6
672	.7753	7	.8151	8	.8438	9	.8743	10	.8986	11	.9178	12	.9342	13
673	.9411	14	.9534	15	.9633	16	.9633	17	.9685	18	.9685	19	.9639	20
674	.9744	21	.9712	22	.9712	23	.9726	24	.9753	25	.9767	26	.9767	27
675	.9767	28	.9741	29	.9781	30	.9781	31	.9781	32	.9781	33	.9781	34
676	.9745	35	.9795	36	.9795	37	.9818	38	.9818	39	.9818	40	.9822	41
677	.9822	42	.9836	43	.9836	44	.9836	45	.9836	46	.9836	47	.9836	48
678	.9836	49	.9836	50	.9836	51	.9849	52	.9849	53	.9849	54	.9849	55
679	.9863	56	.9863	57	.9877	58	.9877	59	.9877	60	1.1111	61		
680	72	1	.50	0	243	2	4							
681	WU	7	5	13	31	45	9	C	M	F	38	5		
682	1.	0	.1237	1	.2132	2	.3373	3	.3759	4	.4346	5	.4934	6
683	.5442	7	.5911	8	.6301	9	.6651	10	.6949	11	.7234	12	.7415	13
684	.7633	14	.7751	15	.7889	16	.8013	17	.8096	18	.8185	19	.8259	20
685	.8335	21	.8385	22	.8442	23	.8513	24	.8551	25	.8511	26	.8567	27
686	.8694	28	.8732	29	.8752	30	.8839	31	.8843	32	.8874	33	.8928	34
687	.8936	35	.8963	36	.8987	37	.9005	38	.9021	39	.9033	40	.9031	41
688	.9071	42	.9086	43	.9103	44	.9115	45	.9132	46	.9150	47	.9163	48
689	.9172	49	.9184	50	.9192	51	.9202	52	.9211	53	.9224	54	.9238	55
690	.9253	56	.9267	57	.9281	58	.9294	59	.9301	60	1.1111	61		
691	73	2	.25	0	361	3	3							
692	WU	5	5	1	9	3	35	C	M	F	5			
693	0.	0	.1244	1	.1475	2	.1543	3	.1758	4	.1914	5	.1985	6
694	.1251	7	.1328	8	.1441	9	.1554	10	.1627	11	.1733	12	.1773	13
695	.1434	14	.1495	15	.1526	16	.1562	17	.1599	18	.1635	19	.1666	20
696	.2102	21	.2115	22	.2151	23	.2188	24	.2233	25	.2236	26	.2236	27
697	.2243	28	.2273	29	.2285	30	.2310	31	.2334	32	.2352	33	.2371	34
698	.2413	35	.2419	36	.2450	37	.2456	38	.2535	39	.2529	40	.2541	41
699	.2584	42	.2596	43	.2645	44	.2675	45	.2691	46	.2761	47	.2779	48
700	.2731	49	.2821	50	.2846	51	.2876	52	.2925	53	.2949	54	.2992	55
701	.3141	56	.3196	57	.3120	58	.3159	59	.3205	60	1.0000	61		
702	74	2	.53	0	481	4	3							
703	WU	5	6	1	9	3	36	C	M	F	5			
704	0.	0	.2023	1	.3577	2	.4577	3	.5374	4	.5915	5	.6371	6
705	.6741	7	.7322	8	.7213	9	.7384	10	.7525	11	.7636	12	.7755	13
706	.7837	14	.7888	15	.7945	16	.8033	17	.8144	18	.8193	19	.8143	20

713 .	.8178	21	.9227	22	.9254	23	.9231	24	.8323	25	.9357	26	.4396	27
714 .	.8629	28	.8642	29	.8690	30	.8514	31	.8538	32	.8566	33	.8596	34
715 .	.8618	35	.8646	36	.8675	37	.8704	38	.8726	39	.8750	40	.8795	41
716 .	.8826	42	.8851	43	.8868	44	.8888	45	.8896	46	.8917	47	.8938	48
717 .	.8970	49	.8993	50	.9016	51	.9041	52	.9079	53	.9101	54	.9121	55
718 .	.9143	56	.9166	57	.9185	58	.9203	59	.9227	60	1.1111	61		
719 .	75	1	.51	0	150	3	4							
720 .	40	8	6	31	45	4	4	C M F	38	43	5			
721 .	1.	3	.1526	1	.2533	2	.3451	3	.4358	4	.4436	5	.4793	6
722 .	.5033	7	.5146	8	.5314	9	.5406	10	.5477	11	.5515	12	.5702	13
723 .	.5814	14	.5846	15	.5942	16	.6023	17	.6069	18	.6100	19	.6136	20
724 .	.6132	21	.6259	22	.6323	23	.6363	24	.6422	25	.6473	26	.6544	27
725 .	.6595	28	.6641	29	.6697	30	.6764	31	.6835	32	.6896	33	.6973	34
726 .	.7024	35	.7039	36	.7085	37	.7111	38	.7141	39	.7192	40	.7254	41
727 .	.7315	42	.7346	43	.7443	44	.7504	45	.7540	46	.7586	47	.7611	48
728 .	.7637	49	.7713	50	.7723	51	.7745	52	.7815	53	.7836	54	.7866	55
729 .	.7912	56	.7953	57	.8019	58	.8061	59	.8091	60	1.1111	61		
730 .	WORK UNIT													
731 .	45													
732 .	1	4	7	45	4	45	6	45	5	45				
733 .	2	4	3	5	2	5	4	5	6	5				
734 .	3	4	1	4	3	4	4	5	6	5				
735 .	4	4	3	31	4	31	2	30	6	30				
736 .	5	4	3	3	4	3	6	3	5	3				
737 .	6	1	15	3										
738 .	7	3	9	5	3	4	4	9						
739 .	8	2	5	2	4	2								
740 .	9	3	5	1	6	1	4	1						
741 .	10	3	3	15	6	15	4	15						
742 .	11	3	6	10	5	10	4	10						
743 .	12	4	3	10	4	10	5	10	1	10				
744 .	13	3	3	6	4	6	6	6						
745 .	14	3	5	15	3	15	4	15						
746 .	15	4	6	3	1	3	3	3	4	3				
747 .	16	3	5	15	4	15	4	15						
748 .	17	2	4	3	5	3								
749 .	18	2	5	9	6	9								
750 .	19	3	4	7	4	7	6	7						
751 .	20	2	6	45	5	45								
752 .	21	2	3	25	6	25								
753 .	22	2	7	25	5	25								
754 .	23	3	5	15	6	15	4	10						
755 .	24	3	1	15	3	15	2	15						
756 .	25	3	1	15	3	15	6	15						
757 .	26	1	0	3										
758 .	27	3	1	9	6	9	5	9						
759 .	28	3	2	9	3	9	6	9						
760 .	29	3	1	35	3	35	6	35						
761 .	30	4	2	3	1	8	4	8	6	8				
762 .	31	3	13	5	5	5	5	5						
763 .	32	3	2	33	4	33	13	33						
764 .	33	2	15	6	6	3								
765 .	34	2	5	12	6	12								
766 .	35	1	14	20										
767 .	36	3	11	33	11	33	7	33						

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764 . 57 4 6 2 4 2 2 2 1 2
765 . 14 7 7 12 1 12
771 . 19 1 2 3
771 . 1 1 2 5
772 . 41 2 1 15 1 7
773 . 42 1 14 25
774 . 43 2 13 25 6 51
775 . 44 2 17 45 3 45
776 . 45 2 21 15 13 33
777 . TYPE
778 . 2
779 . 1.1 1 1.1 1 *
780 . 0.0 0 0.0015 1 0.0017 2 0.01+1 3 0.0183 4 0.0216 5 0.0296 6
781 . 0.0333 7 0.0371 8 0.0371 9 0.0419 10 0.0534 11 0.0642 12 0.0724 13
782 . 0.1044 14 0.1158 15 0.1129 16 0.1173 17 0.1235 18 0.1246 19 0.1353 20
783 . 0.1369 21 0.1407 22 0.1445 23 0.1537 24 0.1637 25 0.1738 26 0.1846 27
784 . 0.1934 28 0.2047 29 0.2110 30 0.2644 31 0.4178 32 0.4575 33 0.4579 34
785 . 0.4755 35 0.5333 36 0.5347 37 0.5515 38 0.5477 39 0.5896 40 0.5965 41
786 . 0.6022 42 0.6112 43 0.6133 44 0.6271 45 0.6544 46 0.6591 47 0.6815 48
787 . 0.6957 49 0.6493 50 0.6947 51 0.7018 52 0.7426 53 0.7458 54 0.7551 55
788 . 0.7648 56 0.7782 57 0.7737 58 0.7833 59 0.7864 60 0.8153 61 0.8183 62
789 . 0.8549 63 0.8567 64 0.8592 65 0.8727 66 0.8727 67 0.9133 68 0.9191 69
790 . 0.9404 70 0.9411 71 0.9545 72 0.9511 73 0.9912 74 1.0000 75
791 . *
792 . 1.1 1 1.5 1 1.7 2 1.9 3 1.0 4 *
793 . 0.0000 1 0.014 18 0.029 20 0.029 45 0.032 46 0.034 47 0.036 48
794 . 0.436 50 0.460 52 0.534 53 0.551 54 0.555 55 0.618 56 0.760 57
795 . 0.811 58 0.822 59 0.870 61 0.881 63 0.896 67 0.950 68 0.956 71
796 . 0.962 72 1.000 74
797 . *
798 . *
799 . *
800 . *
801 . *
802 . *
803 . *
804 . *
805 . *
806 . *
807 . *
808 . *
809 . *
810 . *
811 . *
812 . 241.0 680.0 512.0 222.0 158.0 321.0 217.0 222.0
813 . 92.0 255.0 344.0 168.0 60.0 65.0 54.0
814 . 151.0 151.0 151.0 151.0 151.0 150.0 150.0
815 . 150.0 151.0 151.0 151.0 151.0 151.0
816 . VEHICLES 2
817 . HELICOPTER AIR
818 . AMBULANCE GROUND
819 .
820 . DEFAULTS
821 . RULES
822 . REQUEST HELICOPTER POOL 3
      LOAD.1 AMBULANCE 2

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423 .      HELICOPTER 2      , 2
424 .      DESTN.1  AMBULANCE 1 1 HOME ,
425 .      2 3 ,
426 .      HELICOPTER 1 1 HOME ,
427 .      2 3 , 5
428 .      UNLOAD.1  AMBULANCE 3 ,
429 .      HELICOPTER 3 , 5
430 .      LOAD.2    AMBULANCE 1 2 ,
431 .      2 2 ,
432 .      3 2 ,
433 .      4 2 ,
434 .      HELICOPTER 1 2 ,
435 .      2 2 ,
436 .      3 2 ,
437 .      4 2 , 5
438 .      DESTN.2  AMBULANCE 1 1 HOME ,
439 .      2 3 ,
440 .      HELICOPTER 1 1 HOME ,
441 .      2 3 , 5
442 .      UNLOAD.2  AMBULANCE 3 ,
443 .      HELICOPTER 3 , 5
444 .      END.PULE
445 .      SPEED    HELICOPTER 100
446 .      AMBULANCE 25      5
447 .      DONE
448 .      LEVELS   4
449 .      FERRA    36
450 .      LOAD     INPATIENT 1.0
451 .      OUTPATIENT 1.5      3
452 .      TREATERS 0 10      8
453 .      RULES
454 .      REQUEST  AMBULANCE  GAS  CS  HOSP , 5
455 .      END.PULE
456 .      DONE
457 .      HAS      9
458 .      DISTANCE 3
459 .      VEHICLES  AMBULANCE 1 8 5
460 .      LOAD     OUTPATIENT 1.2 3
461 .      TREATERS 3 2 5 15 6 6 15 1 5
462 .      SEC.FAC  4 5 6 3 11 13 17 20 24
463 .      26 32 41 42 45 46 48 54 57 59 64
464 .      61 63 64 67 5
465 .      RULES
466 .      REQUEST  AMBULANCE  GAS  CS  HOSP , 5
467 .      END.PULE
468 .      DONE
469 .      CS      3
470 .      DISTANCE 12
471 .      VEHICLES  AMBULANCE 1 8 3
472 .      LOAD     OUTPATIENT 1.2 3
473 .      TREATERS 60
474 .      EVAC      3
475 .      TREATERS 1 2 2 2 3 2 5 12 5 11 7 4 13 2
476 .      16 4 16 2 14 4 5
477 .      SEC.FAC  30 34 51 52 53 61 62 68 71 73 74

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REQUEST	AMBULANCE	CS	HOSP	.	3
END.RULE					
DONE					
HOSP	1				
DISTANCE	33				
VEHICLES	AMBULANCE	6	8	3	
LOAD	OUTPATIENT	3.1	5		
REDS	230				
EVAC	15				
TREATERS	1 2 2 19 3 6 4 25 5 27 5 16				
	7 3 9 1 13 1 11 1 13 3 14 1				
	15 5 15 3 17 1 18 11 13 3 20 1 3				
SEC.FAC	1 2 3 7 9 13 12 14 15 16 18				
	19 21 22 23 25 27 28 29 31 33 35				
	36 37 38 39 41 43 44 47 49 51 55				
	56 65 66 69 71 72 75 3				
DONE					
OPERATION					
DAYS	15				
DAWN	5.				
DUSK	18.				
AIR.TRIG	6				
GRND.TRIG	2				
CONV	2.				
POOL	33				
HELICOPTER	16 24 3				
DONE					
OUTPUT					
ECHO					
FREQUENCY	1.3				
RUN.NO	II-39				
DONE					

MEDICAL TECHNOLOGY INPUTS.
PATIENT CLASS DATA.

CLASS PRIORITY MOBILITY THRESHOLDS NEXT LEVEL WORK UNITS.

1	1	3.	5	183	1	4	6	17	9	15	33	14	41FCM	42	11	13	5	6	58	133	.
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 115, 150, FIRST AID: 68, 103, CONV: 58, 133, MORT: 58, 133.																					
... NOTE ... ALL PATIENTS IN THIS CLASS WILL INCREASE THEIR CONV.																					
2	1	53	99	363	1	4	6	33	9	42FCM	11	5									
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 50, 90, FIRST AID: 37, 37, CONV: 37, 37, MORT: 37, 37.																					
3	1	33	183	1	4	6	9	15	33	14	41FCM	42	13	11	5	6					
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 112, 147, FIRST AID: 65, 103, CONV: 65, 103, MORT: 65, 103.																					
... NOTE ... ALL PATIENTS IN THIS CLASS WILL INCREASE THEIR CONV.																					
4	2	3.	99	723	2	6	12	33	29FCM	11	9	5	6								
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 73, 73, FIRST AID: 58, 55, CONV: 58, 55, MORT: 58, 55.																					
5	2	3.	99	183	1	2	6	33	43FCM	5	2										
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 42, 67, FIRST AID: 36, 61, CONV: 36, 61, MORT: 36, 61.																					
6	3	3.	99	1443	12	2	6	33	43FCM	5	2										
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 42, 67, FIRST AID: 36, 61, CONV: 36, 61, MORT: 36, 61.																					
7	1	3.	33	183	1	4	6	9	15	12	33	41FCM	42	13	11	5	6				
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 127, 142, FIRST AID: 63, 95, CONV: 63, 95, MORT: 63, 95.																					
8	1	3.	5	363	3	4	6	17	33	41FCM	42	13	33	11	9	5	6				
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 136, 143, FIRST AID: 49, 84, CONV: 49, 84, MORT: 49, 84.																					
9	3	1.33	99	1443	12	2	33	9	13FCM	5											
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 27, 27, FIRST AID: 24, 24, CONV: 24, 24, MORT: 24, 24.																					
10	1	3.	33	183	1	4	6	9	15	12	33	41FCM	42	43	13	11	5	6			
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 137, 147, FIRST AID: 53, 94, CONV: 53, 94, MORT: 53, 94.																					
11	2	1.33	5	363	3	2	17	33	41FCM	11	5										
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 59, 94, FIRST AID: 46, 81, CONV: 46, 81, MORT: 46, 81.																					
12	2	3.	99	183	1	4	6	9	12	33	41FCM	42	11	13	5	6					
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 134, 139, FIRST AID: 57, 92, CONV: 57, 92, MORT: 57, 92.																					
13	3	1.33	99	723	6	2	4	33	29FCM	11	13	5									
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 63, 63, FIRST AID: 44, 44, CONV: 44, 44, MORT: 44, 44.																					
14	1	3.	99	723	1	4	6	9	15	33	14	41FCM	42	13	11	5	6				
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 52, 52, FIRST AID: 24, 24, CONV: 24, 24, MORT: 24, 24.																					
15	2	1.33	99	723	1	4	6	9	15	33	14	41FCM	42	13	11	5	6				
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 46, 46, FIRST AID: 21, 21, CONV: 21, 21, MORT: 21, 21.																					

BEST AVAILABLE COPY

TABLE 11 - COMBAT ZONE SIMULATION SUB-MODEL												
16	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	6	12	1	6	17	9	15	41FCM 42 11 13 5 6	45	30
17	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	59	59	11	11	5	36	CONV 36	36	MORT 36	
18	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	37	37	14	14	5	22	CONV 22	22	MORT 22	
19	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	23	23	14	14	5	0	CONV 20	20	MORT 0	
20	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	80	80	5	5	5	0	CONV 2	2	MORT 0	
21	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	7	7	402	402	5	0	CONV 65	65	MORT 0	
22	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	6	6	13	13	5	57	CONV 57	57	MORT 57	
23	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	6	6	13	13	5	57	CONV 57	57	MORT 57	
24	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	33	33	9	9	11	0	CONV 36	36	MORT 0	
25	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	6	6	33	33	9	41FCM 43 11 10 13 5	82	CONV 47	82	MORT 47
26	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	33	33	9	9	29FCM 11 3 5	44	CONV 44	44	MORT 44	
27	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	145	145	205	205	41FCM 43 11 10 13 5	71	CONV 71	106	MORT 71	
28	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	145	145	205	205	41FCM 43 11 10 13 5	71	CONV 71	106	MORT 71	
29	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	145	145	205	205	41FCM 43 11 10 13 5	71	CONV 71	106	MORT 71	
30	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	170	170	230	230	41FCM 43 11 10 13 5	92	CONV 67	92	MORT 57	
31	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	104	104	164	164	41FCM 43 11 10 13 5	44	CONV 44	44	MORT 44	
32	MIN-MAX TREATMENT TIMES WITHOUT DELAYS.	TOTAL	63	63	63	63	41FCM 43 11 10 13 5	44	CONV 44	44	MORT 44	

33	1	3	94	243	7	5	33	4	27	26	41FCM	10	13	9	5	6	100	65	100
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
34	1	3	94	3	72	3	33	44	45	42	34	5							
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
35	1	3	94	3	72	4	33	44	45	42	34	5							
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
36	1	3	94	5	183	1	6	17	16	41FCM	43	11	43	13	31	4	5	0	0
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
37	1	3	94	5	183	3	4	17	15	14	41FCM	33	42	11	33	13	3	5	91
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
38	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
39	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
40	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
41	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
42	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
43	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
44	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
45	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
46	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
47	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
48	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
49	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			
50	1	3	94	5	183	1	4	17	15	14	41FCM	33	42	11	33	13	3	5	56
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL																			

MINES II - CUMULATIVE ZONE SIMULATION SUB-MODEL

	MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL:	79, 114	FIRST AID:	46, 81	CONV:	NO.	11	MORT:	46, 81
51	1.00 99 0 12 3	33 31 40 38 5							
52	1.00 99 0 12 3	33 31 40 38 5							
53	1.00 99 0 12 3	33 31 40 38 5							
54	1.00 99 0 12 3	33 31 40 38 5							
55	1.00 99 0 12 3	33 31 40 38 5							
56	1.00 99 0 12 3	33 31 40 38 5							
57	1.00 99 0 12 3	33 31 40 38 5							
58	1.00 99 0 12 3	33 31 40 38 5							
59	1.00 99 0 12 3	33 31 40 38 5							
60	1.00 99 0 12 3	33 31 40 38 5							
61	1.00 99 0 12 3	33 31 40 38 5							
62	1.00 99 0 12 3	33 31 40 38 5							
63	1.00 99 0 12 3	33 31 40 38 5							
64	1.00 99 0 12 3	33 31 40 38 5							
65	1.00 99 0 12 3	33 31 40 38 5							
66	1.00 99 0 12 3	33 31 40 38 5							
67	1.00 99 0 12 3	33 31 40 38 5							

68	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	2	33	11	31	9	8	34	5	J	CONV:	3,	J	MORT:	3,	J	.
69	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	5	33	31	32	9FCN	8	36	5	5	CONV:	47,	47	MORT:	47,	47	.
70	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	31	32	9FCN	8	34	5	36	5	5	CONV:	36,	36	MORT:	36,	36	.
71	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	33	31	45	9FCN	8	5	36	5	5	CONV:	29,	44	MORT:	29,	44	.
72	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	5	13	31	45	9FCN	38	5	5	5	CONV:	30,	45	MORT:	30,	45	.
73	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	5	1	9	8	36FCN	5	81	5	5	CONV:	81,	81	MORT:	81,	81	.
74	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	5	1	9	8	36FCN	5	81	5	5	CONV:	81,	81	MORT:	81,	81	.
75	MIN-MAX	TREATMENT TIMES WITHOUT DELAYS. TOTAL:	5	31	45	8	4FCN	38	43	5	5	CONV:	55,	70	MORT:	55,	70	.

PRIORITY	STABILIZATION TIME	EVACUATION THRESHOLD	TREATMENT THRESHOLD
1	24.3 HRS	3. HRS	23.3 MINS
2	12.3 HRS	1.0 HRS	80.0 MINS
3	3. HRS	24.3 HRS	1483.3 MINS
4	0. HRS	24.3 HRS	1483.3 MINS

NAMES II - COMBAT ZONE SIMULATION SUB-MODEL.

WORK UNITS AND PREFERRED TREATERS

WORK	PREFERRED	1ST ALT.	2ND ALT.	3RD ALT.
1	7	45	6	45
2	3	5	4	5
3	1	4	4	5
4	3	30	2	30
5	3	4	4	5
6	15	3	4	3
7	19	3	4	9
8	5	2	2	1
9	6	1	4	15
10	5	15	4	15
11	6	10	4	10
12	3	10	4	10
13	3	6	4	6
14	6	15	4	15
15	6	3	3	3
16	6	15	4	15
17	4	3	4	15
18	5	3	4	7
19	3	4	4	7
20	6	45	4	45
21	6	25	4	25
22	7	25	4	25
23	5	10	4	10
24	1	15	2	15
25	1	15	4	15
26	2	3	4	3
27	1	4	4	9
28	2	3	4	9
29	1	35	4	35
30	2	4	4	4
31	13	5	4	5
32	12	30	13	30
33	15	4	4	4
34	5	12	4	12
35	14	20	4	20
36	11	30	7	30
37	3	2	2	2
38	2	12	1	12
39	0	0	0	0
40	4	60	0	60
41	1	35	3	35
42	14	25	6	25
43	14	25	6	25
44	17	45	3	45
45	20	15	13	15

OPERATIONAL INPUTS.

```

=====
..... FACILITY LEVEL 1 FERRA                      36 UNITS
=====
..... FACILITY LEVEL 1 BAS                          9 UNITS
=====

0 1  DISTANCE 1 3 MILES TO FERRA
    EVACUATION POLICY 1 3 DAYS
    BEDS 0
    SUPPORTING UNIT 1 CS 0 1
    HELICOPTER 1 0 ASSIGNED. SPEED 1 100
    AMBULANCE 1 1 ASSIGNED. SPEED 1 25
    TREATERS 1 4 TYPES
    3 2, 5 15, 6 6, 15 1.

.....
0 2  DISTANCE 1 3 MILES TO FERRA
    EVACUATION POLICY 1 3 DAYS
    BEDS 0
    SUPPORTING UNIT 1 CS 0 1
    HELICOPTER 1 0 ASSIGNED. SPEED 1 100
    AMBULANCE 1 1 ASSIGNED. SPEED 1 25
    TREATERS 1 4 TYPES
    3 2, 5 15, 6 6, 15 1.

.....
0 3  DISTANCE 1 3 MILES TO FERRA
    EVACUATION POLICY 1 3 DAYS
    BEDS 0
    SUPPORTING UNIT 1 CS 0 1
    HELICOPTER 1 0 ASSIGNED. SPEED 1 100
    AMBULANCE 1 1 ASSIGNED. SPEED 1 25
    TREATERS 1 4 TYPES
    3 2, 5 15, 6 6, 15 1.

.....
0 4  DISTANCE 1 3 MILES TO FERRA
    EVACUATION POLICY 1 3 DAYS
    BEDS 0
    SUPPORTING UNIT 1 CS 0 2
    HELICOPTER 1 0 ASSIGNED. SPEED 1 100
    AMBULANCE 1 1 ASSIGNED. SPEED 1 25
    TREATERS 1 4 TYPES
    3 2, 5 15, 6 6, 15 1.

.....
0 5  DISTANCE 1 3 MILES TO FERRA
    EVACUATION POLICY 1 3 DAYS
    BEDS 0
    SUPPORTING UNIT 1 CS 0 2
    HELICOPTER 1 0 ASSIGNED. SPEED 1 100
    AMBULANCE 1 1 ASSIGNED. SPEED 1 25
    TREATERS 1 4 TYPES
    3 2, 5 15, 6 6, 15 1.

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36/17/77

---SIMULATION: 11-39

NAMES II - COMBAT ZONE SIMULATION SUB-MODEL.

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.....
0 6 .....
DISTANCE ..... 3 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....
SUPPORTING UNIT ..... CS 0 2
HELICOPTER ..... 1 ASSIGNED. SPEED 1 100
AMBULANCE ..... 1 ASSIGNED. SPEED 1 25
TREATERS ..... 4 TYPES
3 2, 5 15, 6 6, 15 1,
.....

0 7 .....
DISTANCE ..... 3 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....
SUPPORTING UNIT ..... CS 0 3
HELICOPTER ..... 1 ASSIGNED. SPEED 1 100
AMBULANCE ..... 1 ASSIGNED. SPEED 1 25
TREATERS ..... 4 TYPES
3 2, 5 15, 6 6, 15 1,
.....

0 8 .....
DISTANCE ..... 3 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....
SUPPORTING UNIT ..... CS 0 3
HELICOPTER ..... 1 ASSIGNED. SPEED 1 100
AMBULANCE ..... 1 ASSIGNED. SPEED 1 25
TREATERS ..... 4 TYPES
3 2, 5 15, 6 6, 15 1,
.....

0 9 .....
DISTANCE ..... 3 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....
SUPPORTING UNIT ..... CS 0 3
HELICOPTER ..... 1 ASSIGNED. SPEED 1 100
AMBULANCE ..... 1 ASSIGNED. SPEED 1 25
TREATERS ..... 4 TYPES
3 2, 5 15, 6 6, 15 1,
.....

=====
..... FACILITY LEVEL ..... CS
=====
3 UNITS

0 1 .....
DISTANCE ..... 12 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....
SUPPORTING UNIT ..... HOSP 0 1
HELICOPTER ..... 1 ASSIGNED. SPEED 1 100
AMBULANCE ..... 1 ASSIGNED. SPEED 1 25
TREATERS ..... 13 TYPES
1 2, 2 2, 3 2, 5 12, 6 10, 7 9, 13 2, 15 9,
16 2, 18 4,
.....

0 2 .....
DISTANCE ..... 12 MILES TO FEB4
EVACUATION POLICY ..... 3 DAYS
BEDS .....

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30/17/77

--- SIMULATION: IT-39

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL.

SUPPORTING UNIT : HOSP # 1
 HELICOPTER : 0 ASSIGNED. SPEED : 100
 AMBULANCE : 3 ASSIGNED. SPEED : 25
 TREATERS : 10 TYPES
 1 2, 2 2, 3 2, 5 12, 6 13, 7 4, 13 2, 15 4,
 16 2, 18 4,

0 3 DISTANCE :
 EVACUATION POLICY : 12 MILES TO FEBA
 3 DAYS

ACDS
 SUPPORTING UNIT : HOSP # 1
 HELICOPTER : 0 ASSIGNED. SPEED : 100
 AMBULANCE : 3 ASSIGNED. SPEED : 25
 TREATERS : 10 TYPES
 1 2, 2 2, 3 2, 5 12, 6 13, 7 4, 13 2, 15 4,
 16 2, 18 4,

.....
 FACILITY LEVEL : HOSP 1 UNITS

0 1 DISTANCE :
 EVACUATION POLICY : 30 MILES TO FEBA
 15 DAYS
 ACDS
 SUPPORTING UNIT : HOSP # 1
 HELICOPTER : 5 ASSIGNED. SPEED : 133
 AMBULANCE : 6 ASSIGNED. SPEED : 25
 TREATERS : 14 TYPES
 1 2, 2 19, 3 6, 4 26, 5 27, 6 16, 7 3, 9 1,
 13 1, 11 1, 13 3, 14 1, 15 6, 16 3, 17 1, 18 11,
 19 3, 20 1,

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL.

OPERATIONAL AND LOGISTICS INPUTS

 LENGTH OF COMBAT 1 15 DAYS
 DAYLIGHT HOURS FROM 600 TO 1800
 AIR VEHICLE THRESHOLD 6
 SOUND WE4 THRESHOLD 2

APPENDIX D

SAMPLE COMPUTER REPORTS OF
NAMES II BASELINE SIMULATION
OUT PUTS

DAY 11 OF 15

DAY 11 CO-STATS: 15

PATIENT STATISTICS FOR EACH LEVEL

345

	PRIORITY				PRIORITY				TOTAL	TOTAL	TOTAL	TOTAL
	1	2	3	4	1	2	3	4				
ENTERED FACILITY	0	0	0	0	0	0	0	0	0	0	0	0
EVACUATED TO THIS FACILITY	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL ADMISSIONS	0	0	0	0	0	0	0	0	0	0	0	0
RETURNED TO DDIV - NO CONV	0	0	0	0	0	0	0	0	0	0	0	0
- WITH CONV	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
DIED - IN TREATMENT	0	0	0	0	0	0	0	0	0	0	0	0
- IN TREATMENT QUEUE	0	0	0	0	0	0	0	0	0	0	0	0
- IN EVAC QUEUE	0	0	0	0	0	0	0	0	0	0	0	0
- IN TRANSIT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
EVACUATED	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LEAVING	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING AT END OF PERIOD	0	0	0	0	0	0	0	0	0	0	0	0
STABILIZED- NO TREATMENT ASSIGNED	0	0	0	0	0	0	0	0	0	0	0	0
- EVAC POLICY LIMIT	0	0	0	0	0	0	0	0	0	0	0	0
- NO BEDS	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING IN STABILIZATION	0	0	0	0	0	0	0	0	0	0	0	0
CONVALESCENCE - ENTERED	0	0	0	0	0	0	0	0	0	0	0	0
- INCREASED	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING IN CONVALESCENCE	0	0	0	0	0	0	0	0	0	0	0	0

JAN 11 OF 13

PATIENT STATISTICS FOR EACH LEVEL

CS

DAILY STATISTICS DURING CONVALESCENCE PERIOD

	PRIORITY				PRIORITY				TOTAL	PRIORITY				TOTAL
	1	2	3	4	1	2	3	4		1	2	3	4	
ENTERED FACILITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVACUATED TO THIS FACILITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL ADMISSIONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RETURNED TO DUTY - NO CONVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RETURNED TO DUTY - WITH CONVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIED - IN TREATMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- IN TREATMENT QUEUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- IN EVAC QUEUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- IN TRANSIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVACUATED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LEAVING	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING AT END OF PERIOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STABILIZED- NO TREATMENT ASSIGNED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- EVAC POLICY LIMIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- NO BEDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING IN STABILIZATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONVALESCENCE - ENTERED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- INCREASED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REMAINING IN CONVALESCENCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY 11 OF 15

PATIENT STATISTICS FOR EACH LEVEL

	PRIORITY					PRIORITY					PRIORITY				
	1	2	3	4	TOTAL	1	2	3	4	TOTAL	1	2	3	4	TOTAL
ENTERED FACILITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVACUATED TO THIS FACILITY	115	53	101	7	276	1075	493	1034	69	2676	1075	493	1034	69	2676
TOTAL ADMISSIONS	115	53	101	7	300	1075	493	1034	225	2832	1075	493	1034	225	2832
RETURNED TO DUTY - NO CONV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- WITH CONV	23	7	0	0	30	139	45	90	1	275	139	45	90	1	275
TOTAL	23	7	0	0	30	139	45	90	1	275	139	45	90	1	275
DIED - IN TREATMENT	1	3	1	2	7	12	50	41	5	68	12	50	41	5	108
- IN TREATMENT QUEUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- IN EVAC QUEUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- IN TRANSIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	3	1	2	7	12	50	41	5	68	12	50	41	5	108
EVACUATED	67	19	95	3	184	650	269	499	1	1859	650	269	499	1	1859
TOTAL LEAVING	88	39	105	31	263	878	413	997	225	2513	878	413	997	225	2513
REMAINING AT END OF PERIOD	197	45	37	3	319										
STABILIZED- NO TREATMENT ASSIGNED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- EVAC POLICY LIMIT	90	32	45	3	167	712	243	431	3	1436	712	243	431	3	1436
- NO RES	21	6	51	0	82	223	109	468	1	901	223	109	468	1	901
TOTAL	111	40	96	0	247	935	402	899	1	2237	935	402	899	1	2237
REMAINING IN STABILIZATION	94	23	3	0	117										
CONVALESCENCE - REPORTED	22	13	4	0	39	240	107	127	1	475	240	107	127	1	475
- INCREASED	44	19	2	0	65	332	147	18	2	599	332	147	18	2	599
REMAINING IN CONVALESCENCE	101	62	37	0	210										

NAME II - CUMULATIVE SIMULATION SUB-MODEL. --- SIMULATION II-84 ---									
DAILY STATISTICS DURING COMBAT PERIOD									
	DATE	11	COMBAT	15	30/11/77	PAGE	266		
44	0	0	0	0	0	0	0	0	0
45	1	1	1	1	1	1	1	1	1
46	0	0	0	0	0	0	0	0	0
47	1	1	1	1	1	1	1	1	1
48	0	0	0	0	0	0	0	0	0
49	1	1	1	1	1	1	1	1	1
50	0	0	0	0	0	0	0	0	0
51	1	1	1	1	1	1	1	1	1
52	0	0	0	0	0	0	0	0	0
53	1	1	1	1	1	1	1	1	1
54	0	0	0	0	0	0	0	0	0
55	1	1	1	1	1	1	1	1	1
56	0	0	0	0	0	0	0	0	0
57	1	1	1	1	1	1	1	1	1
58	0	0	0	0	0	0	0	0	0
59	1	1	1	1	1	1	1	1	1
60	0	0	0	0	0	0	0	0	0
61	1	1	1	1	1	1	1	1	1
TOTAL	517	107	83	117	255	131	51	182	

WORK UNIT REQUIREMENTS AND TREATMENT AVAILABILITY LEVEL: 4054

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WAVES II - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION: II-33 --- JN/17/77 PAGES 208
 DAILY STATISTICS DURING COMBAT PERIOD DAY: 11 COMBAT: 15
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NAME: II - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION: II-34 DAY: 11
 DAILY STATISTICS DURING COMBAT PERIOD

VEHICLE TYPE	HOME	VEHICLE STATISTICS			DAILY			RETURN			GLOBAL			AVG	
		TRIPS	TIME	AVG	TRIPS	TIME	AVG	TRIPS	TIME	AVG	TRIPS	TIME	AVG	TRIP	OCCUP.
		HOME	IN USE	OCCUP.	HOME	IN USE	OCCUP.	HOME	IN USE	OCCUP.	HOME	IN USE	OCCUP.	TRIP	OCCUP.
THE FOLLOWING VEHICLES ARE WAITING AT HOME															
AMBULANCE	3AS	1	8 12.244	1.531	365	75	115.713	1.543	314						
AMBULANCE	BAS	2	8 9.877	1.231	330	79	121.456	1.539	358						
AMBULANCE	BAS	3	8 11.576	1.231	355	79	123.034	1.565	343						
AMBULANCE	BAS	4	8 13.637	1.521	455	79	118.131	1.495	353						
AMBULANCE	BAS	7	7 12.333	1.715	363	51	124.342	1.541	376						
AMBULANCE	BAS	8	7 13.445	1.320	375	58	120.271	1.753	376						
AMBULANCE	CS	1	13 13.324	1.392	315	44	131.159	1.452	353						
AMBULANCE	CS	1	11 12.608	1.419	425	43	136.374	1.515	344						
AMBULANCE	CS	2	11 17.345	1.553	395	42	129.446	1.412	355						
AMBULANCE	HOSP	1	5 11.751	2.352	185	43	98.172	2.283	389						
AMBULANCE	HOSP	1	6 12.441	2.083	363	43	97.331	2.277	369						
AMBULANCE	HOSP	1	6 13.203	2.203	100	42	95.772	2.283	373						
AMBULANCE	HOSP	1	6 12.963	2.163	133	44	97.453	2.215	117						
AMBULANCE	HOSP	1	6 12.484	2.381	253	43	94.391	2.293	133						
AMBULANCE	HOSP	1	7 13.320	1.989	330	46	133.337	2.181	381						
AMBULANCE	HOSP	1	7 4.206	5.01	394	49	53.445	5.01	398						
HELICOPTER	POOL	7	4.213	6.31	117	49	53.247	5.44	395						
HELICOPTER	POOL	7	4.811	6.31	147	44	53.826	6.31	132						
HELICOPTER	POOL	8	4.811	6.31	102	49	53.821	6.31	339						
HELICOPTER	POOL	8	4.811	6.31	155	49	53.431	6.01	335						
HELICOPTER	POOL	8	4.811	6.31	112	43	53.745	5.98	338						
HELICOPTER	POOL	8	4.811	6.31	123	49	58.426	6.31	344						
HELICOPTER	POOL	8	4.811	6.31	110	49	53.473	6.01	337						
HELICOPTER	POOL	8	4.811	6.31	122	49	53.353	6.01	342						
HELICOPTER	POOL	8	4.811	6.31	112	49	53.353	6.31	133						
HELICOPTER	POOL	8	4.811	6.31	166	43	54.147	6.31	131						
HELICOPTER	POOL	8	4.811	6.31	134	40	54.041	6.01	131						
HELICOPTER	POOL	8	4.811	6.31	139	43	54.373	6.31	139						
HELICOPTER	POOL	8	4.811	6.31	114	40	53.445	5.98	331						
HELICOPTER	POOL	8	4.811	6.31	114	43	54.321	6.31	331						
HELICOPTER	POOL	8	4.811	6.31	142	43	54.131	6.01	146						
THE FOLLOWING VEHICLES ARE EN ROUTE															
AMBULANCE	3AS	2	11 17.764	1.515	465	85	135.403	1.593	336						
AMBULANCE	BAS	5	13 13.446	1.445	449	75	127.437	1.632	344						
AMBULANCE	BAS	4	8 4.441	1.643	285	70	113.555	1.622	348						
AMBULANCE	CS	2	8 14.831	1.460	404	46	134.541	1.566	437						
AMBULANCE	CS	3	8 11.247	1.411	360	42	121.737	1.485	376						
AMBULANCE	CS	3	8 13.444	1.494	364	79	125.379	1.583	357						
AMBULANCE	BAS	6	7 12.724	1.813	425	41	135.117	1.626	377						
AMBULANCE	CS	1	4 12.447	1.337	363	44	132.243	1.503	350						
AMBULANCE	CS	3	8 13.644	1.523	356	42	126.244	1.540	364						

LEVEL	VEHICLE TYPE	VEHICLE REQUIREMENTS				DAILY NUMBER OF REQUESTS				GLOBAL			
		MADE BY	MADE BY	MADE BY	MADE BY	MADE BY	MADE BY	MADE BY	MADE BY	NUMBER OF REQUESTS	PLACED ON A HONORED	PLACED ON A HONORED	PICKUP STOPS
		BY A HONORED	BY A HONORED	BY A HONORED	BY A HONORED	BY A HONORED	BY A HONORED	BY A HONORED	BY A HONORED	MADE BY A HONORED	ON A HONORED	ON A HONORED	TRIPS EN ROUTE
FEBA	HELICOPTER	125	125	0	0	0	0	0	0	1741	1419	0	0
	AMBULANCE	233	126	0	0	0	0	0	0	3535	1136	0	0
BAS	HELICOPTER	0	0	0	0	0	0	0	0	12	0	0	0
	AMBULANCE	132	42	332	74	0	0	0	0	785	346	4290	690
CS	HELICOPTER	0	0	0	0	0	0	0	0	5	0	0	0
	AMBULANCE	75	31	333	69	0	0	0	0	547	249	4147	779
MOBP	HELICOPTER	0	0	0	0	0	0	0	0	0	0	0	0
	AMBULANCE	0	0	244	36	0	0	0	0	0	0	3154	261
POOL	HELICOPTER	125	125	0	0	0	0	0	0	1754	1431	0	0
	AMBULANCE	0	0	0	0	0	0	0	0	0	0	0	0

THE SIMULATION 503-50355.

COAR: 15 COUAR: 15

RELATIVES.

		HOURS OF DAY																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
DAY.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.		
	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	
	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24.	101A.	

30/17/77
COMBAT: 15

DAY: 33

---SIMULATION: 11-33
SUMMARY STATISTICS AFTER END OF COMBAT

NAMES II - COMBAT ZONE SIMULATION SUB-MODEL
SUMMARY STATISTICS AFTER END OF COMBAT

IN P A R T I E L Y S

SUMMARY OF WORK UNIT REQUIREMENTS AND TREATMENT AVAILABILITY

WORK UNIT NUMBER	FIRA				RAS				CS				HOSP			
	REQ	ASGN	AVL	DIED	REQ	ASGN	AVL	DIED	REQ	ASGN	AVL	DIED	REQ	ASGN	AVL	DIED
1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
2	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
3	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
4	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
5	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
6	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
7	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
8	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
9	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
10	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
11	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
12	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
13	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
14	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
15	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
16	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
17	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
18	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
19	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
20	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
21	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
22	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
23	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
24	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
25	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
26	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
27	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
28	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
29	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
30	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
31	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
32	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
33	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
34	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
35	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
36	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
37	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
38	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
39	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
40	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
41	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
42	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
43	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0

OUTPUT

SUMMARY OF WORK UNIT REQUIREMENTS AND TREATMENT AVAILABILITY

WORK UNIT NUMBER	FIBA				AS				CS				HOSP			
	RED	ASGN	AVL	DIED	RED	ASGN	AVL	DIED	RED	ASGN	AVL	DIED	RED	ASGN	AVL	DIED
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PATIENT DISPOSITION SUMMARY BY DAYS OF CONVALESCENCE - LEVEL: 145

DAYS OF CONV.S T A T I S T I C S.....				C O N V A L E S C E N C E.....				E V A C U A T I O N.....				
	REQS REQUIRED	NO TREAT ASSIGNED	EVAC POLICY	RED SHORTAGE	REMAIN IN STRZ	ENTERED CONV.	CONV. ONLY	REMAIN IN CONV.	NO TREAT ASSIGNED	EVAC POLICY	RED SHORTAGE	REMAIN IN STRZ	ENTERED CONV.	CONV. ONLY	REMAIN IN CONV.
EVAC 0	0	0	161	161	0	0	0	0	0	0	0	0	0	0	0
1	1	1	161	161	161	0	0	0	0	0	0	0	0	0	0
2	2	2	161	161	334	0	0	0	0	0	0	0	0	0	0
3	3	3	161	161	492	0	0	0	0	0	0	0	0	0	0
4	4	4	161	161	559	0	0	0	0	0	0	0	0	0	0
5	5	5	161	161	624	0	0	0	0	0	0	0	0	0	0
6	6	6	161	161	689	0	0	0	0	0	0	0	0	0	0
7	7	7	161	161	753	0	0	0	0	0	0	0	0	0	0
8	8	8	161	161	817	0	0	0	0	0	0	0	0	0	0
9	9	9	161	161	882	0	0	0	0	0	0	0	0	0	0
10	10	10	161	161	946	0	0	0	0	0	0	0	0	0	0
11	11	11	161	161	1010	0	0	0	0	0	0	0	0	0	0
12	12	12	161	161	1074	0	0	0	0	0	0	0	0	0	0
13	13	13	161	161	1138	0	0	0	0	0	0	0	0	0	0
14	14	14	161	161	1202	0	0	0	0	0	0	0	0	0	0
15	15	15	161	161	1266	0	0	0	0	0	0	0	0	0	0
16	16	16	161	161	1330	0	0	0	0	0	0	0	0	0	0
17	17	17	161	161	1394	0	0	0	0	0	0	0	0	0	0
18	18	18	161	161	1458	0	0	0	0	0	0	0	0	0	0
19	19	19	161	161	1522	0	0	0	0	0	0	0	0	0	0
20	20	20	161	161	1586	0	0	0	0	0	0	0	0	0	0
21	21	21	161	161	1650	0	0	0	0	0	0	0	0	0	0
22	22	22	161	161	1714	0	0	0	0	0	0	0	0	0	0
23	23	23	161	161	1778	0	0	0	0	0	0	0	0	0	0
24	24	24	161	161	1842	0	0	0	0	0	0	0	0	0	0
25	25	25	161	161	1906	0	0	0	0	0	0	0	0	0	0
26	26	26	161	161	1970	0	0	0	0	0	0	0	0	0	0
27	27	27	161	161	2034	0	0	0	0	0	0	0	0	0	0
28	28	28	161	161	2098	0	0	0	0	0	0	0	0	0	0
29	29	29	161	161	2162	0	0	0	0	0	0	0	0	0	0
30	30	30	161	161	2226	0	0	0	0	0	0	0	0	0	0
31	31	31	161	161	2290	0	0	0	0	0	0	0	0	0	0
32	32	32	161	161	2354	0	0	0	0	0	0	0	0	0	0
33	33	33	161	161	2418	0	0	0	0	0	0	0	0	0	0
34	34	34	161	161	2482	0	0	0	0	0	0	0	0	0	0
35	35	35	161	161	2546	0	0	0	0	0	0	0	0	0	0
36	36	36	161	161	2610	0	0	0	0	0	0	0	0	0	0
37	37	37	161	161	2674	0	0	0	0	0	0	0	0	0	0
38	38	38	161	161	2738	0	0	0	0	0	0	0	0	0	0
39	39	39	161	161	2802	0	0	0	0	0	0	0	0	0	0
40	40	40	161	161	2866	0	0	0	0	0	0	0	0	0	0
41	41	41	161	161	2930	0	0	0	0	0	0	0	0	0	0
42	42	42	161	161	2994	0	0	0	0	0	0	0	0	0	0
43	43	43	161	161	3058	0	0	0	0	0	0	0	0	0	0

PATIENT DISPOSITION SUMMARY BY DAYS OF CONVALESCENCE - LEVEL 1 CS

DAYS OF CONV.	REDS REQUIRED	S T A B I L I Z A T I O N				C O N V A L E S C E N C E				E V A C U A T I O N				TOTAL
		NO TREAT ASSIGNED	EVAC POLICY	BE D SHORTAGE	REMAIN IN STG	ENTERED CONV.	CONV. ONLY	REMAIN IN CONV.	NO TREAT ASSIGNED	EVAC POLICY	BE D SHORTAGE	REMAIN IN CONV.	NO TREAT ASSIGNED	
1	1	15	15	0	0	0	0	0	15	15	0	0	0	15
2	1	15	15	0	0	0	0	0	15	15	0	0	0	15
3	1	15	15	0	0	0	0	0	15	15	0	0	0	15
4	1	15	15	0	0	0	0	0	15	15	0	0	0	15
5	1	15	15	0	0	0	0	0	15	15	0	0	0	15
6	1	15	15	0	0	0	0	0	15	15	0	0	0	15
7	1	15	15	0	0	0	0	0	15	15	0	0	0	15
8	1	15	15	0	0	0	0	0	15	15	0	0	0	15
9	1	15	15	0	0	0	0	0	15	15	0	0	0	15
10	1	15	15	0	0	0	0	0	15	15	0	0	0	15
11	1	15	15	0	0	0	0	0	15	15	0	0	0	15
12	1	15	15	0	0	0	0	0	15	15	0	0	0	15
13	1	15	15	0	0	0	0	0	15	15	0	0	0	15
14	1	15	15	0	0	0	0	0	15	15	0	0	0	15
15	1	15	15	0	0	0	0	0	15	15	0	0	0	15
16	1	15	15	0	0	0	0	0	15	15	0	0	0	15
17	1	15	15	0	0	0	0	0	15	15	0	0	0	15
18	1	15	15	0	0	0	0	0	15	15	0	0	0	15
19	1	15	15	0	0	0	0	0	15	15	0	0	0	15
20	1	15	15	0	0	0	0	0	15	15	0	0	0	15
21	1	15	15	0	0	0	0	0	15	15	0	0	0	15
22	1	15	15	0	0	0	0	0	15	15	0	0	0	15
23	1	15	15	0	0	0	0	0	15	15	0	0	0	15
24	1	15	15	0	0	0	0	0	15	15	0	0	0	15
25	1	15	15	0	0	0	0	0	15	15	0	0	0	15
26	1	15	15	0	0	0	0	0	15	15	0	0	0	15
27	1	15	15	0	0	0	0	0	15	15	0	0	0	15
28	1	15	15	0	0	0	0	0	15	15	0	0	0	15
29	1	15	15	0	0	0	0	0	15	15	0	0	0	15
30	1	15	15	0	0	0	0	0	15	15	0	0	0	15
31	1	15	15	0	0	0	0	0	15	15	0	0	0	15
32	1	15	15	0	0	0	0	0	15	15	0	0	0	15
33	1	15	15	0	0	0	0	0	15	15	0	0	0	15
34	1	15	15	0	0	0	0	0	15	15	0	0	0	15
35	1	15	15	0	0	0	0	0	15	15	0	0	0	15
36	1	15	15	0	0	0	0	0	15	15	0	0	0	15
37	1	15	15	0	0	0	0	0	15	15	0	0	0	15
38	1	15	15	0	0	0	0	0	15	15	0	0	0	15
39	1	15	15	0	0	0	0	0	15	15	0	0	0	15
40	1	15	15	0	0	0	0	0	15	15	0	0	0	15
41	1	15	15	0	0	0	0	0	15	15	0	0	0	15
42	1	15	15	0	0	0	0	0	15	15	0	0	0	15
43	1	15	15	0	0	0	0	0	15	15	0	0	0	15

44	3	15	7	1359	3	5	1	45	0	503	0	3	0	1111	0	15	7	1059	0	3	7	137
45	3	15	4	1323	3	5	3	85	3	533	3	3	3	1111	3	15	4	1043	0	3	4	1062
46	3	15	4	1027	3	5	0	85	3	533	3	3	3	1111	3	15	4	1367	3	3	4	1066
47	3	15	8	1375	3	5	3	43	3	533	3	3	3	1111	3	15	8	1375	3	3	4	1094
48	3	15	6	1341	3	5	1	93	3	533	3	3	3	1111	0	15	6	1081	0	3	4	1100
49	3	15	6	1083	3	5	1	91	3	533	3	3	3	1111	3	15	2	1083	3	3	2	1102
50	3	15	5	1084	3	5	2	43	0	503	0	0	0	1111	3	15	5	1319	3	3	0	1108
51	3	15	3	1352	3	5	1	44	3	533	3	3	3	1111	3	15	3	1342	3	3	3	1131
52	3	15	6	1398	3	5	2	45	3	533	3	3	3	1111	3	15	6	1098	0	3	6	1117
53	3	15	4	1106	3	5	1	97	3	533	3	3	3	1111	3	15	4	1136	3	3	8	1125
54	3	15	7	1113	3	5	1	44	0	503	0	0	0	1111	3	15	7	1113	3	3	7	1132
55	3	15	4	1117	3	5	3	48	3	533	3	3	3	1111	3	15	4	1117	3	3	4	1136
56	3	15	3	1123	3	5	3	48	3	533	3	3	3	1111	0	15	3	1120	0	3	3	1139
57	3	15	4	1125	3	5	0	48	0	503	0	0	0	1111	3	15	5	1125	3	3	5	1144
58	3	15	4	1129	3	5	3	48	0	503	0	0	0	1111	3	15	4	1129	0	3	4	1148
59	3	15	4	1133	3	5	3	48	3	533	3	3	3	1111	3	15	4	1133	3	3	4	1152
60	3	15	1	1134	3	5	3	44	3	533	3	3	3	1111	3	15	1	1134	0	3	1	1153
61	3	15	2	1341	3	5	5	155	0	503	0	3	3	1111	0	15	206	1340	0	3	236	1359
TOTAL	15	15	1341	1121	3	155	633	1111	15	1341	4	1359										

PATIENT DISPOSITION SUMMARY BY DAYS OF CONVALESCENCE - LEVEL: 403P

DAYS OF CONV.	REDS REMOVED	STATION				CONVALESCENCE				EVAUATION				TOTAL EVACUATED
		NO TREAT ASSIGNED	EVAC POLICY	SURVIVAGE	REMAIN IN STG	ENTERED CONV.	CONV. ONLY	REMAIN IN CONV.	NO TREAT ASSIGNED	EVAC POLICY	SURVIVAGE	REMAIN IN CONV.	NO TREAT ASSIGNED	
1	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
11	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
12	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
13	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
15	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
16	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
17	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
21	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
22	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
23	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
24	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
25	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
26	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
27	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
28	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
29	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
30	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
31	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
32	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
33	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
34	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
35	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
37	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
38	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
39	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
40	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
41	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
42	1155	0	0	0	0	0	0	0	0	0	0	0	0	0
43	1155	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE II - COMBAT ZONE SIMULATION SUB-MODEL SUMMARY STATISTICS AFTER END OF COMBAT									
		--- SIMULATION: II-54 ---		DATE: 31		COMBAT: 15		PAGE: 443	
44	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0
TOTAL	7633	1610	868	1212	573	3555	1010	577	2195

30/17/77
DAY 30 COMBAT 15

SIMULATION II-33
SUMMARY STATISTICS AFTER END OF COMBAT

NAMES II - COMBAT ZONE SIMULATION SUB-MODEL
SUMMARY STATISTICS AFTER END OF COMBAT

DAILY SUMMARY - STABILIZATION, VACUATION, CONVALESCENCE AND RED STATISTICS LEVEL 1 FEB 84

DAYS AFTER D-DAY	PATIENT ADMISSION CUMUL	STABILIZATION NO EVAC TR. PLCY	NO EVAC NO TR. PLCY	CONVALESCENCE ENTR ONLY INCR	REMAINING IN IN STRZ CONV TOTAL	PERCENT OF REQUIREMENT	CUMULATIVE OCCUPANCY	ADMISSIONS CAPACITY
1	L 312 312	0	0	0	0	0	0	0
2	L 713 1325	0	0	0	0	0	0	0
3	L 545 1613	0	0	0	0	0	0	0
4	L 233 1306	0	0	0	0	0	0	0
5	L 228 2134	0	0	0	0	0	0	0
6	L 373 2514	0	0	0	0	0	0	0
7	L 290 2794	0	0	0	0	0	0	0
8	L 242 3046	0	0	0	0	0	0	0
9	L 164 3253	0	0	0	0	0	0	0
10	L 337 3587	0	0	0	0	0	0	0
11	L 416 4003	0	0	0	0	0	0	0
12	L 234 4237	0	0	0	0	0	0	0
13	L 122 4359	0	0	0	0	0	0	0
14	L 132 4491	0	0	0	0	0	0	0
15	L 131 4622	0	0	0	0	0	0	0
16	L 4622	0	0	0	0	0	0	0
17	L 4622	0	0	0	0	0	0	0
18	L 4622	0	0	0	0	0	0	0
19	L 4622	0	0	0	0	0	0	0
20	L 4622	0	0	0	0	0	0	0
21	L 4622	0	0	0	0	0	0	0
22	L 4622	0	0	0	0	0	0	0
23	L 4622	0	0	0	0	0	0	0
24	L 4622	0	0	0	0	0	0	0
25	L 4622	0	0	0	0	0	0	0
26	L 4622	0	0	0	0	0	0	0
27	L 4622	0	0	0	0	0	0	0
28	L 4622	0	0	0	0	0	0	0
29	L 4622	0	0	0	0	0	0	0
30	L 4622	0	0	0	0	0	0	0

DAILY SUMMARY - STABILIZATION, EVACUATION, CONVALESCENCE AND RED STATISTICS LEVEL: 145

JAN 5 PATIENT AFTER ADMISSION O-DAY C DAY CUMUL	STABILIZATION			EVACUATION			CONVALESCENCE			REMAINING			RED STATISTICS		
	NO EVAC NO	IS. PLV. RED	TOTAL	NO EVAC NO	IS. PLV. RED	TOTAL	CONV	THIRD DAY INCR	IN 3137	IN 3137	CONV	TOTAL	PERCENT OF REQUIREMENT	CUMULATIVE OCCUPANCY	ADMISSIONS CAPACITY
1	107	107	107	84	10	72	3	2	3	3	3	3	3	3	0
2	331	438	769	276	14	290	0	0	15	0	15	0	0	0	0
3	237	645	882	205	11	216	0	17	4	0	20	0	0	0	0
4	114	754	868	121	9	130	0	4	2	0	22	0	0	0	0
5	112	866	978	74	13	87	0	0	6	0	12	0	0	0	0
6	139	945	1084	128	4	132	0	0	7	0	19	0	0	0	0
7	122	1117	1239	134	13	147	0	0	13	0	32	0	0	0	0
8	112	1229	1341	94	8	102	0	0	4	0	36	0	0	0	0
9	74	1303	1377	61	17	78	0	0	1	0	37	0	0	0	0
10	124	1432	1556	113	13	126	0	0	1	0	38	0	0	0	0
11	134	1616	1750	153	15	168	0	0	12	0	50	0	0	0	0
12	32	1738	1770	75	11	86	0	0	1	0	51	0	0	0	0
13	54	1762	1816	27	8	35	0	0	1	0	52	0	0	0	0
14	38	1745	1783	17	6	23	0	0	1	0	53	0	0	0	0
15	43	1844	1887	15	15	30	0	0	3	0	56	0	0	0	0
16	5	1853	1858	6	1	7	0	0	3	0	59	0	0	0	0
17	3	1853	1856	3	3	6	0	0	3	0	62	0	0	0	0
18	3	1850	1853	0	0	3	0	0	3	0	65	0	0	0	0
19	3	1853	1856	0	0	3	0	0	3	0	68	0	0	0	0
20	0	1850	1850	0	0	0	0	0	3	0	71	0	0	0	0
21	0	1853	1853	0	0	0	0	0	3	0	74	0	0	0	0
22	0	1853	1853	0	0	0	0	0	3	0	77	0	0	0	0
23	0	1853	1853	0	0	0	0	0	3	0	80	0	0	0	0
24	0	1850	1850	0	0	0	0	0	3	0	83	0	0	0	0
25	0	1853	1853	0	0	0	0	0	3	0	86	0	0	0	0
26	0	1853	1853	0	0	0	0	0	3	0	89	0	0	0	0
27	0	1850	1850	0	0	0	0	0	3	0	92	0	0	0	0
28	0	1853	1853	0	0	0	0	0	3	0	95	0	0	0	0
29	0	1853	1853	0	0	0	0	0	3	0	98	0	0	0	0
30	0	1853	1853	0	0	0	0	0	3	0	101	0	0	0	0

DAYS AFTER D-DAY	PATIENT ADMISSION CUMUL	STABILIZATION NO EVAC NO TR. PLCY RED TOTAL	EVACUATION NO EVAC NO TR. PLCY RED TOTAL	CONVALESCENCE CONV ENTERED ONLY INCR	REMAINING IN STAT CONV TOTAL	PERCENT OF EQUIPMENT OCCUPANCY	RED STATISTICS CUMULATIVE ADMISSIONS CAPACITY
1	140	2	0	0	13	33	183 128.57
2	362	1	0	0	24	119	193 35.86
3	333	1	0	0	15	163	193 22.19
4	171	3	0	0	4	113	127 12.42
5	121	2	0	0	6	73	74 6.35
6	201	1	0	0	16	64	65 5.21
7	161	2	0	0	13	73	85 5.12
8	162	2	0	0	4	82	92 5.04
9	175	1	0	0	6	57	57 3.33
10	153	1	0	0	11	65	76 3.43
11	220	1	0	0	23	89	423 180 8.49
12	134	1	0	0	13	81	3.59 81 1.99
13	2313	1	0	0	2	46	1.79 46 7.78
14	2375	2	0	0	5	18	.76 18 7.58
15	2439	0	0	0	3	15	.52 15 .62
16	2445	1	0	0	13	12	.41 13 7.35
17	2448	0	0	0	7	6	.25 6 7.35
18	2448	0	0	0	2	2	.08 2 7.35
19	2448	0	0	0	0	0	0 0 7.35
20	2448	0	0	0	0	0	0 0 7.35
21	2448	0	0	0	0	0	0 0 7.35
22	2448	0	0	0	0	0	0 0 7.35
23	2448	0	0	0	0	0	0 0 7.35
24	2448	0	0	0	0	0	0 0 7.35
25	2448	0	0	0	0	0	0 0 7.35
26	2448	0	0	0	0	0	0 0 7.35
27	2448	0	0	0	0	0	0 0 7.35
28	2448	0	0	0	0	0	0 0 7.35
29	2448	0	0	0	0	0	0 0 7.35
30	2448	0	0	0	0	0	0 0 7.35
31	2448	0	0	0	0	0	0 0 7.35
32	2448	0	0	0	0	0	0 0 7.35
33	2448	0	0	0	0	0	0 0 7.35

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DAILY SUMMARY - STABILIZATION, VACUATION, COMVALESCENCE AND BED STATISTICS LEVEL 1 HOSP

DAYS AFTER 0-DAY	PATIENT ADMISSION CUMUL	...STABILIZATION...		...EVAUATION...		...COMVALESCENCE...		...REMAINING...		...BED STATISTICS...		
		NO EVAC NO	TR. PLCY BED TOTAL	NO EVAC NO	TR. PLCY BED TOTAL	ENTERED ONLY	INCR	IN 14	STBZ CONV TOTAL	PERCENT OF REQUIREMENT	CUMULATIVE ADMISSIONS	CAPACITY
1	L 234	234	3	97	3	39	3	41	58	72	35.29	72
2	L 513	734	3	238	42	323	3	84	163	201	36.01	200
3	L 436	1118	3	210	137	347	3	131	173	233	34.95	233
4	L 254	1342	3	129	105	234	3	53	105	203	33.59	233
5	L 154	1546	3	76	53	131	3	28	67	233	31.57	233
6	L 256	1812	3	146	98	244	3	52	122	233	29.25	200
7	L 232	2004	3	112	68	180	3	45	83	233	26.15	233
8	L 187	2191	3	93	76	169	3	31	76	233	23.59	233
9	L 107	2298	3	46	43	89	3	15	33	233	21.15	233
10	L 234	2532	3	125	62	187	3	41	83	233	19.34	233
11	L 131	2682	3	167	80	247	3	65	117	233	17.93	233
12	L 131	3023	3	94	53	147	3	31	51	200	16.21	200
13	L 92	3085	3	24	14	38	3	12	13	233	14.94	233
14	L 77	3162	3	36	3	39	3	16	24	193	13.36	193
15	L 51	3213	3	24	3	27	3	9	15	171	10.74	171
16	L 3	3222	3	4	3	14	3	7	13	135	8.57	135
17	L 3	3225	3	0	0	0	3	0	3	121	7.13	121
18	L 1	3226	3	3	3	3	3	0	3	133	5.67	133
19	L 1	3226	3	3	3	3	3	0	3	143	4.43	143
20	L 0	3226	3	0	0	0	3	0	3	119	3.59	119
21	L 3	3226	3	3	3	3	3	0	3	57	2.73	57
22	L 3	3226	3	3	3	3	3	0	3	46	1.92	46
23	L 3	3226	3	3	3	3	3	0	3	36	1.59	36
24	L 3	3226	3	3	3	3	3	0	3	28	1.18	28
25	L 0	3226	3	0	0	0	3	0	3	20	.84	20
26	L 0	3226	3	0	0	0	3	0	3	13	.37	13
27	L 3	3226	3	3	3	3	3	0	3	8	.25	8
28	L 3	3226	3	3	3	3	3	0	3	5	.15	5
29	L 0	3226	3	0	0	0	3	0	3	1	.03	1
30	L 3	3226	3	3	3	3	3	0	3	0	0	0

BED REQUIREMENTS OUTSIDE THE COMBAT ZONE

DAYS AFTER 0-DAY	BEDS AFTER 0-DAY	BEDS AFTER 0-DAY	BEDS AFTER 0-DAY	BEDS AFTER 0-DAY
1	44	24	122	47
2	245	25	1496	71
			1351	275
				244

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1	500	26	1464	49	1038	72	173
2	852	27	1449	51	1018	73	14
3	942	28	1414	51	1019	74	40
4	1119	29	1355	52	935	75	21
5	1204	31	1371	53	934	76	10
6	1325	31	1347	54	925	77	1
7	1424	32	1323	55	904	78	4
8	1486	33	1327	56	938	79	0
9	1635	34	1287	57	942	80	1
10	1773	35	1266	58	929	81	1
11	1819	36	1249	59	919	82	1
12	1747	37	1233	60	916	83	1
13	1771	38	1216	61	896	84	1
14	1773	39	1202	62	867	85	1
15	1859	40	1179	63	731	86	1
16	1691	41	1162	64	658	87	1
17	1631	42	1152	65	554	88	0
18	1600	43	1135	66	498	89	0
19	1571	44	1114	67	440	90	1
20	1543	45	1094	68	373	91	1
21		46	1042	69	317	92	0

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LEVEL: 1 FEBJA

DAILY SUMMARY - PATIENT DISPOSITIONS.

DAYS AFTER A	ADMISSIONS	EVACUATED	RETURNED TO DUTY	REMAINING	EVACUATED	REMAINING	EVACUATED	REMAINING	EVACUATED	REMAINING
0-DAY C	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL	DAY CUMUL
1	312	312	0	0	0	0	0	0	0	0
2	713	1025	0	0	0	0	0	0	0	0
3	548	1613	0	0	0	0	0	0	0	0
4	231	1405	0	0	0	0	0	0	0	0
5	226	2134	0	0	0	0	0	0	0	0
6	371	2524	0	0	0	0	0	0	0	0
7	294	2794	0	0	0	0	0	0	0	0
8	232	3135	0	0	0	0	0	0	0	0
9	164	3299	0	0	0	0	0	0	0	0
10	337	3636	0	0	0	0	0	0	0	0
11	416	4052	0	0	0	0	0	0	0	0
12	254	4237	0	0	0	0	0	0	0	0
13	122	4359	0	0	0	0	0	0	0	0
14	132	4491	0	0	0	0	0	0	0	0
15	131	4622	0	0	0	0	0	0	0	0
16	1	4623	0	0	0	0	0	0	0	0
17	1	4624	0	0	0	0	0	0	0	0
18	1	4625	0	0	0	0	0	0	0	0
19	1	4626	0	0	0	0	0	0	0	0
20	1	4627	0	0	0	0	0	0	0	0
21	1	4628	0	0	0	0	0	0	0	0
22	1	4629	0	0	0	0	0	0	0	0
23	1	4630	0	0	0	0	0	0	0	0
24	1	4631	0	0	0	0	0	0	0	0
25	1	4632	0	0	0	0	0	0	0	0
26	1	4633	0	0	0	0	0	0	0	0
27	1	4634	0	0	0	0	0	0	0	0
28	1	4635	0	0	0	0	0	0	0	0
29	1	4636	0	0	0	0	0	0	0	0
30	1	4637	0	0	0	0	0	0	0	0

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PERMIT FULLY LEGIBLE PRODUCTION

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DAY 50

--- SIMULATION: 11-54 ---

NAME: 11 - COMBAT ZONE SIMULATION 003-MODEL, 50-45-24 STATISTICS AFTER END OF COMBAT

LEVEL: 145

DAILY SUMMARY - PATIENT DISPOSITIONS.

DAYS LEFT 0-DAY	F A C T O R S	ADMISSIONS AT FAC.	TO FAC.	DISCH. FROM FAC.	RETURNED TO DUTY	DIED	EVACUATED	REMAINING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
									DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY	CUMUL	DAY

BEST AVAILABLE COPY

DAILY SUMMARY - PATIENT DISPOSITIONS. LEVEL: GS

DAYS AFTER 0-DAY	C	ADMISSIONS EVACUATED			RETURNED TO DUTY			DIED			EVACUATED			REMAINING			
		AT FAC.	TO FAC.	WITH NO	DAY	CUMUL	CONV	TOTAL	CUMUL	PERCENT	DAY	CUMUL	PERCENT	DAY	CUMUL	PERCENT	
1	L	23	25	117	117	3	28	28	23.33	3	3	3	71	71	91.33	42	33.33
2	L	21	44	341	458	12	27	39	10.77	5	3	8	219	289	90.50	186	40.33
3	L	30	74	273	737	33	35	39	28.80	8	3	11	469	588	98.25	183	59.22
4	L	28	97	144	885	81	27	108	28.19	0	3	3	119	588	99.93	127	74.27
5	L	23	126	42	377	73	35	109	37.38	3	3	6	55	653	93.72	74	61.16
6	L	27	153	174	1151	63	23	78	451	38.51	3	3	112	765	95.72	85	42.29
7	L	36	189	125	1276	34	40	74	525	49.95	0	3	86	851	93.42	86	53.42
8	L	31	221	131	1437	77	33	73	595	43.21	3	3	45	937	93.39	92	56.79
9	L	36	256	52	1464	42	43	95	683	46.73	3	3	93	1073	96.43	65	66.33
10	L	26	282	143	1612	34	28	62	742	36.03	3	3	94	1173	96.43	76	44.37
11	L	24	306	212	1814	33	32	67	839	24.65	0	3	125	1198	95.31	110	48.57
12	L	24	330	110	1924	42	24	73	882	54.44	3	3	126	1276	99.73	91	67.91
13	L	31	361	28	1952	41	35	76	958	128.41	0	3	129	1334	94.37	48	81.36
14	L	29	391	33	1985	35	28	63	1021	131.01	3	3	23	1327	97.13	24	39.71
15	L	25	415	39	2024	14	34	48	1069	75.33	3	3	23	1347	97.13	20	31.25
16	L	0	415	0	2023	0	0	0	1075	100.00	0	3	24	1355	133.33	12	203.33
17	L	0	415	0	2023	0	0	0	1080	106.67	0	3	3	1358	130.00	7	233.33
18	L	0	415	0	2023	0	0	0	1084	3.	0	3	3	1359	3.	2	3.
19	L	0	415	0	2023	0	0	0	1086	3.	0	3	3	1359	3.	0	0.
20	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	0.	0	0.
21	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	0.	0	0.
22	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
23	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
24	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	0.	0	0.
25	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
26	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
27	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
28	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
29	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.
30	L	0	415	0	2023	0	0	0	1086	3.	0	3	0	1359	3.	0	0.

BEST AVAILABLE COPY

PATIENT DISPOSITION SUMMARY BY PATIENT CLASS

PATIENT CLASS	...INPATIENTS...				...OUTPATIENTS...			
	ADMITTED	RED	EVAC	DIED	ADMITTED	RED	EVAC	DIED
1	1	3	3	1	3	3	3	0
2	2	1	1	3	3	3	3	3
3	47	4	26	12	3	3	3	3
4	19	12	7	3	3	3	3	0
5	12	1	11	3	3	3	3	0
6	28	24	4	0	0	0	0	3
7	13	3	13	0	3	3	3	3
8	14	5	3	3	3	3	3	3
9	0	0	0	0	0	0	0	0
10	15	3	14	1	3	3	3	0
11	45	36	5	2	3	3	3	3
12	47	3	16	31	3	3	3	3
13	125	37	63	4	3	3	3	3
14	5	0	5	3	3	3	3	3
15	13	9	13	0	0	0	0	0
16	8	3	2	0	3	3	3	3
17	22	9	13	3	3	3	3	3
18	7	4	3	0	3	3	3	3
19	14	3	11	3	3	3	3	3
20	23	4	20	3	42	42	0	0
21	13	3	13	3	19	19	3	3
22	3	3	2	7	3	3	3	3
23	15	0	5	8	3	3	3	3
24	50	6	50	0	0	0	0	0
25	84	3	78	6	3	3	3	3
26	352	47	253	25	3	3	3	3
27	22	0	17	5	0	0	0	0
28	24	3	23	5	3	3	3	3
29	14	0	17	1	3	3	3	3
30	43	3	34	3	3	3	3	3
31	144	2	197	3	3	3	3	3
32	136	64	114	13	3	3	3	3
33	122	31	54	37	0	0	0	0
34	3	3	3	3	3	3	3	3
35	64	13	25	4	3	3	3	3
36	249	5	197	28	0	0	0	0
37	21	18	3	3	3	3	3	3
38	40	13	26	1	3	3	3	3
39	124	23	97	6	3	3	3	3
40	5	3	1	1	3	3	3	3
41	10	6	13	3	3	3	3	3
42	14	5	7	1	0	0	0	0
43	37	13	24	3	3	3	3	3
44	3	3	3	3	3	3	3	3
45	44	17	82	0	2	2	2	2

30/11/77
COMBAT 15

DAY: 33

---SIMULATION: 11-59
END OF COMBAT

NAME: 11 - COMBAT ZONE SIMULATION SUB-MODEL.
SUMMARY STATISTICS AFTER END OF COMBAT

5	102	64	38	0	564	564	0	0	0
7	21	3	17	0	12	11	0	0	0
9	7	33	41	0	0	0	0	0	0
11	6	16	43	0	0	0	0	0	0
13	16	2	11	1	262	259	0	0	0
15	1	0	1	1	0	0	0	0	0
17	11	5	6	0	42	42	0	0	0
19	127	57	70	0	173	174	0	0	0
21	12	5	7	2	35	35	0	0	0
23	51	11	18	2	5	5	0	0	0
25	52	37	15	0	137	137	0	0	0
27	38	25	4	0	334	334	0	0	0
29	7	4	3	0	92	92	0	0	0
31	15	6	3	0	20	20	0	0	0
33	9	1	4	0	0	0	0	0	0
35	34	69	15	0	136	136	0	0	0
37	12	2	11	0	0	0	0	0	0
39	131	75	50	0	31	31	0	0	0
41	6	1	5	0	0	0	0	0	0
43	13	17	5	1	0	0	0	0	0
45	54	47	5	2	0	0	0	0	0
47	0	0	0	0	40	40	0	0	0
49	109	50	51	0	115	115	0	0	0
51	61	1	23	1	0	0	0	0	0
53	113	14	42	2	0	0	0	0	0
55	4	2	2	0	16	16	0	0	0
57	64	43	21	3	14	13	0	0	0
59	4	1	5	1	0	0	0	0	0
61	125	25	37	3	97	95	0	0	0
63	37	25	12	0	0	0	0	0	0
TOTALS	3595	1178	2134	223	2111	2105	1	5	5

PATIENT DISPOSITION SUMMARY BY TIME SPENT IN THE SYSTEM

DAYS IN SYSTEM	IN	DISPOSITION	TOTAL
	IN	OUT	
1	2131	221	3459
2	204	7	1347
3	206	2	237
4	183	5	183
5	70	0	70
6	56	0	56
7	59	0	59
8	44	0	44
9	52	0	52
10	21	0	21
11	25	0	25
12	21	0	21
13	17	0	17
14	23	0	23
15	26	0	26
16	13	0	13
17	1	0	1
18	0	0	0
19	0	0	0
20	0	0	0
TOTALS	3283	228	5736
PERCENTAGE	57.54	4.00	33.47

FINAL SUMMARY			
INPATIENTS		OUTPATIENTS	
			PERCENT
TOTAL ADMISSIONS	3545	2111	5736
TOTAL LEFT SYSTEM	3535	2111	5736
RETURNED TO DUTY	1174	2135	3283
EVACUATED	2134	1	2195
DIED	223	5	228
TOTAL REMAINING	0	0	0